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Trends in Food Stamp Program Participation Rates: 1976 to 1990

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Trends in Food Stamp Program Participation Rates: 1976 to 1990

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FOREWORD

The Food and Nutrition Service (FNS) has a keen interest in the extent to which Food Stamp Program (FSP) benefits reach those who are eligible for them. The participation rate--the ratio of the number of participants to the number of eligibles--provides a picture of a program's success in reaching this target population. FNS has published a series of reports on FSP participation rates which uses data from the Survey of Income and Program Participation (SIPP) to provide snapshots of rates at specific points in time. SIPP has not existed long enough, however, to give an accurate picture of changes in participation rates over the life of the FSP. This report uses another consistent data source and methodology to measure and compare changes in participation rates over many years and analyzes the causes behind those changes.

This report presents trends in participation rates from 1976 to 1990 based on the Current Population Survey (CPS). The CPS contains information to estimate the number of FSP eligibles over many years, but consistently underestimates participation rates. The SIPP-based series of estimates gives a more accurate measure of participation rates at particular points in time since 1984, but cannot support an historical comparison of rates over a longer period. Our objective in sponsoring this research was to establish the context of long-term changes in program participation rates. Thus, the focus of the report is on overall trends rather than levels.

In addition to giving an historic overview of the trends in rates over time, this report provides important new information as well. A previous report in this series, Food Stamp Program Participation Rates: January 1988, found a small but noticeable decline in the participation rate from August 1985 (the prior period for which rates were estimated) to January 1988. This report found a similar decline between those years, but then finds a reversal of the decline with a significant increase from 1988 to 1990.

These new data help us add the latest piece to the picture of recent influences on FSP participation. Analyses showed that the August 1985to-January 1988 drop in the overall participation rate was due to low participation among those made newly eligible for the FSP by the Food Security Act of 1985 (implemented in 1986). However, over seven million new participants have joined the program since January 1988. We would expect to see a rise in participation rates if these new participants were previously nonparticipating eligibles. The upward trend in participation rates from 1988 to 1990 documented in this report is indeed due to the combined effect of increasing numbers of participants and steady numbers of eligibles.

If this pattern of previously nonparticipating eligibles joining the program continues, we may see further increases in participation rates in the future. The next SIPP-based estimate of participation rates (for January 1992) should be available in late 1993. This will offer the first concrete evidence, using the best possible data for estimating eligibility, of the effect of recent program growth on program participation rates.

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EXECUTIVE SUMMARY

The Food Stamp Program (FSP) helps low-income families and individuals purchase the food they need to maintain a nutritious diet. The FSP provides assistance to all financially needy households without requiring that the household contain certain groups of persons, such as children or elderly persons. However, persons must apply for and be financially eligible for food stamps in order to receive them. Since some financially eligible persons do not apply for food stamps, the *participation rate*--the ratio of the number of participants to the number of eligibles--is less than 100 percent.

The most recent estimate is that approximately 59 percent of persons eligible for the FSP participated in the program in January 1988 (Trippe and Doyle, 1992). While it is unreasonable to expect 100 percent participation among the eligible population, policymakers and other interested parties need to know how the rate of participation has changed over time in order to address two important questions: Has the program reached more or less of its target population in recent years relative to earlier years? And how has participation among the subgroups of the eligible population varied over time? Examining the trends in participation rates indicates the program's relative success at reaching the eligible population.

This study uses a consistent data source and methodology to estimate participation rates over the past 15 years. Specifically, it uses data from the March Current Population Survey (CPS) to estimate the number of eligibles, and FSP administrative data to estimate the number of participants. With these data, we have produced participation rates for every other year from 1976 to 1990. The study also examines the major causes of the changes in the rates over the 15 years. In particular, it examines the influence of changes in FSP legislation, changes in the economy, and changes in other assistance programs on the participation rates.

The study finds that FSP participation rates increased between 1976 and 1978 due to changes in the economy, and increased substantially between 1978 and 1980 due to changes made to the FSP program under the 1977 Food Stamp Act. The 1977 Act, implemented in late 1978 and early 1979, increased the number of participants by making the program accessible to more eligible low-income households. Participation rates remained relatively constant from 1980 to 1988, but again increased between 1988 and 1990. The recent increase in participation rates is due to the surge in FSP participation which began in early 1989.

PURPOSE OF THE ANALYSIS

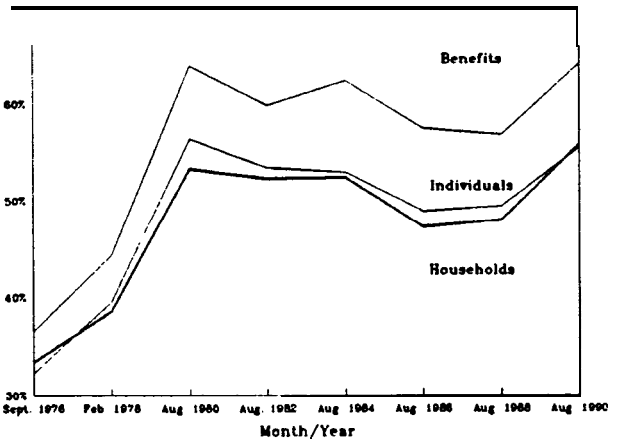
The purpose of this time-series study is to provide a consistent, accurate measure of the *trends* in participation rates, rather than to provide the most accurate estimate of any single participation-rate *level. In* fact, the CPS data used in this analysis consistently overestimate the number of eligibles, and thus substantially underestimate FSP participation rates. More precise SIPP-based estimates of eligibles have been used to estimate participation rates in August 1984, August 1985, and January 1988. The SIPP-based estimates produce participation rates that are over 10 percentage points **higher** than those based on the CPS data used in this report. For example, the more accurate SIPP-based estimate of the participation rate for individuals in January 1988 is 59 percent, rather than the 49 percent CPS-based estimate reported in this report. However, we used the CPS database in this analysis because, unlike the SIPP database, it is available for the entire period from 1976 to 1990.

Thus, readers should focus on the trends reported in this report rather than on any specific participation rate.

TRENDS IN FSP PARTICIPATION RATES: 1976 TO 1990

Participation rates in the FSP increased between 1976 and 1978, and then increased substantially between 1978 and 1980, as illustrated in Figure 1. Participation rates remained relatively constant between 1980 and 1988, but again increased between 1988 and 1990. Participation rates for individuals increased by 7 percentage points between 1976 and 1978, increased by over 16 percentage points between 1978 and 1980, and changed by no more than 8 percentage points over the entire period from 1980 to 1988. Participation rates again rose sharply between 1988 and 1990, increasing by 6 percentage points over two years. Hence, the FSP has reached a much greater proportion of its target population in the years since 1980 than before 1980, and is reaching more eligible persons in 1990 than it did in the 1980s.

FSP MONTHLY PARTICIPATION RATES: 1976 to 1990



The figure also shows that the trend in rates was consistent among the three units of measurement: the benefit rate was consistently higher than the individual rate and the household rate, and the individual rate was consistently higher than the household rate. This consistent pattern indicates that households with higher benefit levels, and thus greater need, are more likely to participate than households with lower benefit levels. It also implies that larger households are more likely to participate than smaller households.

CAUSES OF THE TRENDS IN FSP PARTICIPATION RATES

Participation rates change when the rate of growth in the number of participants differs from the rate of growth in the number of eligibles. Changes in FSP legislation, economic conditions, and other programs affect the rate of growth among participants and eligibles, and thus cause participation rates to change. Since these influences often occur simultaneously, it is difficult to sort out their separate effects on participation rates. However, in most cases, one of the influences dominates the others, causing participation rates to change in a particular direction. The major influences and their effects on the numbers of participants and eligibles and the consequent participation rates between 1976 and 1990 are summarized below:

- *1976 to 1978. Participation rates increased by 7 percentage points due to rising inflation combined with a strengthening economy.* Both of these factors caused the number of eligibles, and to a lesser extent the number of participants, to decline, resulting in a rise in participation rates.

- *1978 to 1980. Participation rates increased by over 16 percentage points due to changes made to the FSP under the Food Stamp Act of 1977.* Under the 1977 Act, the number of participants increased due to the elimination of the purchase requirement, and the number of eligibles declined as a result of restrictive changes to the program such as capping the income eligibility guidelines, resulting in the substantial rise in participation rates.

- *1980 to 1982. Participation rates decreased by about 3 percentage points because the economy was in recession. The* number of eligibles increased more than the number of participants, resulting in a minor drop in participation rates.

- 1982 to 1984. No change in participation rates.

- *1984 to 1986. Participation rates deceased by about 4 percentage points due to the more generous eligibility criteria introduced under the 1985 Food Security Act. The* expanded eligibility criteria immediately increased the number of eligibles, but the newly eligible population did not respond by entering the program.

- 1986 to 1988. No change in participation rates.

- *1988 to 1990. Participation rates increased by about 6 percentage points due to an increase in the number ofparticipants with little change in the number of eligibles. The* number of FSP participants increased due to expansions in the Medicaid program, legislative changes resulting in simplification of the application process, increased outreach to the homeless, and increased expedited service, and immigration legislation granting resident status to selected aliens.

TRENDS BY SELECTED DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

In most cases, *trends* for subgroups of the eligible population follow the same patterns as trends for the total population. However, the *rates* for the subgroups of persons are consistently higher or lower than the overall rates for persons, as discussed below.

Trends by Demographic Characteristics

- Household *size.* Although participation rates for each household size follow the same general pattern as the rates for all households, smaller households tend to participate at lower rates than average, and larger households tend to participate at higher rate-s than average. However, in almost every year of the analysis, participation rates peak for households that contain three persons, as found in other research. Although rates decline with household sizes of more than three persons, rates for larger households are still higher than the rates for single-person households.

- *Age of persons in the Household. The* trend in participation rates for elderly persons, children, and adults also closely follows the trend in rates for all persons. However, the rates for elderly persons are much lower than average, the rates for children are much higher than average, and the rates for adults are close to average in every year of the analysis.

- *Household composition. The* trend in participation rates for persons based on their household composition moves with the trend for all persons. However, the rates for single adults with children are much higher than average, and rates for households without children are much lower than average.

Trends by Economic Characteristics

- Poverty Level. As expected, participation rates in all years were much higher for persons in households whose gross income was below the poverty level than for persons in households whose gross income was above the poverty level.

- *Income Sources.* The pattern of participation rates among persons in households with earnings are similar to the pattern of rates among all persons, but are much lower and vary less. The participation rates for persons in households that received unemployment compensation were also lower than average in all years for which data were available.

- *Benefit Levels.* Persons eligible for the lowest benefit levels (between 1 and 25 percent of the maximum benefit) participate at lower rates than persons eligible for higher benefit levels. In general, participation rates increase as potential benefits increase. However, persons in households eligible for 100 percent of the maximum benefit participate at rates below average. This pattern is found in other studies and is likely due to measurement problems among the highest benefit group.

I. INTRODUCTION

The Food Stamp Program (FSP) helps low-income families and individuals purchase the food they need to maintain a nutritious diet. Unlike other assistance programs, such as the Aid to Families with Dependent Children and the Supplemental Security Income programs, the FSP does not place categorical restrictions on eligibility and participation. The FSP provides assistance to all financially needy households without requiring that the household contain certain groups of persons, such as children or elderly or disabled persons. However, persons must apply for and be financially eligible for food stamps in order to receive them. Since some financially eligible persons do not apply for food stamps, the *participation* rate--the ratio of the number of participants to the number of eligibles--is less than 100 percent.

The most recent estimate is that approximately 59 percent of persons eligible for the FSP participated in the program in January 1988 (Trippe and Doyle, 1992). While it is unreasonable to expect 100 percent participation among the eligible population, policymakers and other interested parties need to know how the rate of participation has changed over time in order to address two important questions: Has the program reached more or less of its target population in recent years relative to earlier years? And how has participation among the subgroups of the eligible population varied over time? Examining the trends in participation rates indicates the program's relative success at reaching the eligible population.

This study uses a consistent data source and methodology to estimate participation rates over the past 15 years. Specifically, it uses data from the March Current Population Survey (CPS) to estimate the number of eligibles, and FSP administrative data to estimate the number of participants. With these data, we have produced participation rates for every other year between 1976 and 1990. The study also examines the major causes of the changes in the rates over the 15 years. In particular, it

examines the influence of changes in FSP legislation, changes in the economy, and changes in other assistance programs on the participation rates.

Although there are a number of estimates of participation rates that, when combined, span the past 15 years, they cannot be used to support a reliable examination of trends, because each study used different data and methods to measure the rates (see Trippe, 1989). Thus, until now it has been impossible to assess how much of the change in each estimate is due to any real change in the rates, and how much is due to differences in the data or methodology.

The analysis in this study focuses on capturing changes in the rates over time, rather than on estimating any single participation-rate level. Indeed, the participation rates found in this study are 10 to 15 percentage points lower than the rates calculated with the more appropriate Survey of Income and Program Participation (SIPP) data on the number of eligibles. The SIPP database is preferred for estimating the number of eligibles, because it contains more of the information required to support the eligibility estimation process, and thus provides more reliable estimates of participation rates. However, because the SIPP database begins with 1984, this study uses the CPS data that have been available since 1976.

The study finds that FSP participation rates increased between 1976 and 1978 due to changes in the economy, and increased substantially between 1978 and 1980 due to changes made to the FSP program under the 1977 Food Stamp Act. The 1977 Act, implemented in late 1978 and early 1979, increased the number of participants by making the program accessible to more eligible low-income households. Participation rates remained relatively constant from 1980 to 1988, but again increased between 1988 and 1990. The recent increase in participation rates is due to the surge in FSP participation which began in early 1989.

The report is organized as follows:

- Chapter II discusses existing research on participation rates.

- Chapter III provides an overview of the data and research methods used to construct the participation rates in this study.

. Chapter IV presents the participation rate estimates for even years between 1976 and 1990, and compares the rates for selected demographic and economic subgroups of the population to overall rates.

- Chapter V assesses the major reasons for changes in the rates between 1976 and 1990.

- Appendix A provides a more detailed explanation of the technical procedures used to estimate the eligible population with the CPS data.

- Appendix B contains a table of changes in the FSP eligibility requirements and deductions associated with legislative changes in the program over the years of the analysis.

- Appendix C lists the sample sizes underlying the participation rates.

II. A REVIEW OF THE RESEARCH ON PARTICIPATION RATES IN THE FOOD STAMP PROGRAM AND OTHER WELFARE PROGRAMS

This Chapter describes the existing research on participation rates in the FSP and other welfare programs. Section A describes the existing estimates of participation rates in the Food Stamp Program and discusses why the rates cannot be used to support a reliable examination of trends. Section B discusses three limited time-series studies of FSP participation rates. Finally, Section C presents the available rates for two other public assistance programs, Supplemental Security Income and Aid to Families With Dependent Children.

A. FOOD STAMP PARTICIPATION RATES

Estimates of participation rates found in available studies vary by up to 30 percentage points for any given year and unit of analysis, depending on the data source and the estimation methodology used in the study. Below, we highlight any consistent patterns that can be discerned from the studies, and discuss why the available rates differ so much and why they cannot be used to support a reliable examination of trends. Table II.1 summarizes the existing studies and their participation-rate estimates.

Existing studies have used three different units of analysis to measure participation rates:

- The ***individual*** participation rate is the ratio of the number of persons in participating households to the number of persons in eligible households.
- The household participation rate is the ratio of the number of participating households to the number of eligible households.
- The ***benefit*** participation rate is the ratio of the dollar amount of benefits issued to the dollar amount of benefits that would have been issued had all eligibles participated in the program.

Each unit of measurement responds to different targeting issues and thus differentially determines how well the FSP meets the needs of its target population. Thus, it is not surprising that partici-

TABLE II.1

INDIVIDUAL, HOUSEHOLD, AND BENEFIT
RATES OF FOOD STAMP PROGRAM PARTICIPATION

Studies (Date)	Data Source/ Reference Year(s)	Individual Rate %	Household Rate %	Benefit Rate %
A. Estimates Based on Household Survey Data for Participants				
West (1984)	CES;[a] 1973-74		24	
Coe (1979)	PSID;[b] 1976		41	
Coe (1983)	PSID;[b] 1979	46		
Czajka (1981)	ISDP[c]; 1979		28-31	
Bickel and MacDonald (1981)	ISDP;[c] 1979		47	
Ross (1988)	SIPP;[d] 1984	51	41	
Brown (1988)	CES;[a] 1984-85		28	
U.S. GAO (1988, 1990a)	PSID;[b] 1986		44	
Allin, Martini (1991)	SIPP;[d] 1985		44	
B. Estimates Based on Administrative Data for Participants				
MacDonald (1975)	Decenial Census;1974	38		
Beebout (1981)	SIE,[e] CPS;[f] 1979, 1981	61-69		
Czajka (1981)	ISDP;[c] 1979	56		
Doyle and Beebout (1988)	SIPP;[d] 1984	66	60	80
Ross (1988)	SIPP;[d] 1984	66	58	
Doyle (1990)	SIPP;[d] 1985	64	59	75
Trippe and Doyle (1991)	SIPP;[d] 1988	59	56	67

SOURCE: Trippe (1989).

[a]Consumer Expenditure Survey.

[b]Michigan Panel Study of Income Dynamics.

[c]1979 Income Survey Development Program Research Test Panel.

[d]Survey of Income and Program Participation.

[e]Survey of Income and Education.

[f]March Current Population Survey.

pation rates calculated with each unit differ, as shown in Table 11.1. In general, participation rates for individuals are higher than those among households, and benefit rates are higher than either the individual or household rates. Individual rates range from 38 to 69 percent, household rates range from 24 to 60 percent, and benefit rates range from 67 to 80 percent.

The rates in Table II.1 also vary according to the reference year of the data. Rates tend to be higher in more recent years than in earlier years.

Even when the unit of analysis and reference year are the same, the rates in Table II.1 vary substantially according to the data source used to estimate them. For example, participation rates among households in 1984 range from 28 percent based on Consumer Expenditure Survey data on the number of eligibles and participants (Brown, 1988) to 60 percent based on the SIPP data on eligibles and FSP program data on participants (Doyle and Beebout, 1988). Participation rates among households in 1985 range from 44 percent based on SIPP data on eligibles and participants (Martini, 1992) to 59 percent based on SIPP data on eligibles and FSP program administrative data on participants (Doyle, 1990).

The major reason that participation rates differ so widely in the existing studies -- even rates that have been derived with the same unit of analysis and from the same reference year -- is the disparate data sources and methodologies used to estimate the number of participants and eligibles. Each of these factors is discussed below.

1. Data on Participants

Most of the difference in the participation rates found in existing studies is due to the data source used to estimate the number of *participants*. Estimates derived from household survey data on the number of participants (the studies in Section A of Table II.1) are much lower than estimates derived from FSP administrative data on the number of participants (the studies in Section B of Table 11.1). For example, Ross (1988) found that participation rates in 1984 were 15 percentage points

higher with administrative data than with household survey data on the number of participants, without a change in the estimated number of eligibles.

FSP administrative data provide an ***actual count*** of participants, while survey data provide an estimate of the number of participants based on reports of participation among a sample of the population estimated to be eligible for the program. Using household survey data tends to underestimate the number of participants.' Hence, studies that use household survey data to estimate the number of participants generally underestimate the participation rate. However, researchers must use household survey data when conducting behavioral analyses -- for example, in behavioral studies of the reasons that eligibles do not participate in the program, household survey data provide the requisite information on the different characteristics of participating and nonparticipating eligible households. Most of the studies in Section A of Table II.1 are survey-based behavioral studies of the FSP eligible population in which participation rates were not the major focus.

2. **Data on Eligibility**

Participation rates also vary because researchers use different procedures and data sources to estimate eligibility for food stamps. Because eligibility for the FSP cannot be observed directly, researchers must use household survey data to estimate the number of eligibles. To date, over a dozen different data sources have been used, including various years of the Current Population Survey (CPS), the Consumer Expenditure Survey (CES), the Survey of Income and Education (SIR), the Panel Study of Income Dynamics (PSID), the Income Survey Development Program Research Test Panel (ISDP), and the Survey of Income and Program Participation (SIPP). In general, researchers apply FSP eligibility criteria to the available information for each household on the file in order to determine the number of eligibles.

'Using household survey data has an unknown effect on the number of eligibles. Doyle (1990) discusses the potential bias in estimates of the number of eligibles derived from household survey data.

However, the quality and quantity of the information necessary for determining food stamp eligibility among these sources varies substantially. Most sources do not contain information on major components of the eligibility process, necessitating that researchers develop methods for simulating the missing or incomplete information. The strength of such methods varies markedly, thereby affecting the accuracy of the eligibility estimates. Moreover, the accuracy of the estimates varies according to the resources available for the study, and the available body of literature on the best approach for compensating for omissions in and weaknesses with the data.

The SIPP household survey data contain more of the information necessary for simulating eligibility than any previous data source. Thus, estimates of the number of eligibles based on the SIPP data are subject to fewer measurement problems than estimates based on other household survey data. However, because the SIPP data were first collected in 1983, they were not available when most of the other studies of participation rates were conducted. Moreover, the SIPP-based estimates are still subject to some measurement and reporting errors because of remaining limitations in the data.

In summary, different studies have generated widely disparate participation rates -- even with the same unit of analysis and reference year -- for two major reasons:

1. The data sources used to measure the number of participants affect the accuracy of the estimates -- that is, administrative data, offering actual counts of participants, provide more accurate measures than survey data.

2. The household survey data used to estimate eligibles are subject to limitations and the methods used to produce estimates despite these limitations incorporate varying assumptions.

B. THREE EXISTING TIME-SERIES STUDIES

Three existing studies provide a limited time-series of participation rates in the FSP. In one of those studies, Trippe (1989) developed participation rates for various years between 1978 and 1988. The number of participants was derived from actual values based on administrative data. The number

of eligibles was estimated from routine updates to the MATH@ model, the microsimulation model used by FNS to evaluate the cost and distributional impacts of proposed program changes. However, because different methodologies were used to produce each estimate, they are limited. Furthermore, the databases underlying each estimate of the FSP participation rate reflect *forecasts* of the economic and demographic characteristics of the population, rather than actual measures of those characteristics.

According to Trippe, the participation rate increased from 43 to 65 percent between 1978 and 1981, due to legislative changes in the program and a weakening economy. The rates dropped slightly in 1982 (to 59 percent) for reasons that were unclear. Finally, the rates remained relatively constant between 1982 and 1988.

In another study, Trippe and Beebout (1988) estimated FSP participation rates among the poverty population for each year between 1980 and 1987. While the rates are limited to the subset of eligibles below poverty and are thus not directly comparable to the rates constructed in this study or to those discussed above, they do provide some important insights. The time series shows that the FSP participation rates for eligibles in poverty declined between 1980 (82 percent) and 1982 (77 percent), then remained close to the 1982 level through 1986, and again declined slightly in 1987 (74 percent). Trippe and Beebout surmised that the decline in the rates early in the decade may have been due to the large increase (17.5 percent) in the number of persons in poverty between 1980 and 1982. The "new poor" of that period may have been less likely to participate in the FSP than the poverty population before 1980, thereby contributing to the decrease in the participation rate.

In the third study, Trippe and Doyle (1992) developed a time series of participation rates from 1985 and 1988 SIPP data.[2] Although they compared only two years, the observed changes in the overall rates are noteworthy. In particular, Trippe and Doyle demonstrate that a substantial increase in the number of eligible households with almost no change in the number of participating households

[2]Although SIPP-based estimates were also available for 1984, the data are not comparable with the 1985 and 1988 data due to methodological differences.

generated a slight decline in participation rates between 1985 and 1988. They found that the increase in the number of eligible households was due to the more generous eligibility criteria implemented in 1986 after the passage of the Food Security Act of 1985. Only six percent of the newly eligible households participated in the FSP in 1988. Trippe and Doyle concluded that the decline in the participation rate between 1985 and 1988 was due to a lack of response to the program changes during that relatively short (three year) period.

C. EXAMINING PARTICIPATION RATES IN THE SSI AND AFDC PROGRAMS

FSP participation interacts with participation in other cash assistance programs. Case workers are encouraged to notify AFDC and SSI applicants about the availability of the Food Stamp Program. Thus, an increase in participation in those programs might trigger an increase in FSP participation. Two recent studies provide trends in participation rates in the AFDC and SSI programs.

1. SSI Participation Rates from 1975 to 1987

Sheils et al. (1990) used data from the CPS to develop several estimates of the SSI program participation rate, as shown in Table 11.2. They found that the rate among elderly persons age 65 or older entitled to federal SSI benefits increased between 1975 and 1978 (from about 54 percent to 61 percent). The rates subsequently varied and then declined to about 56 percent in 1987.

Sheils et al. attributed the early upward trend in federal SSI participation rates to an increasing awareness of the program subsequent to its implementation in 1974. They attributed the later downward trend in the federal rate to a decline in the number of individuals eligible for the maximum benefit, which in turn was due in increases in income from other sources, particularly Social Security and pensions.

2. AFDC Participation Rates from 1973 to 1984

Ruggles and Michel(l987) used CPS data to develop AFDC family participation rates for several years between 1967 and 1984, as shown in Table 11.3. They adjusted their rates for anomalies in both

TABLE II.2

SSI PARTICIPATION RATES ESTIMATED BY SHEILS ET AL. WITH CPS DATA

Year	Rate Among Those Receiving Federal SSI	Rate Among Those Receiving State Supplemental Benefits	Rate Among Those Receiving Either Form of SSI
1975	53.6		
1976	57.9	42.7	51.0
1977	60.8	43.3	53.1
1978	61.1	44.0	53.7
1979	55.0	45.5	51.4
1980	57.9,	49.3	54.7
1981	58.2	42.8	53.8
1982	54.0	44.5	51.0
1983	51.0	40.5	49.0
1984	55.4	49.3	53.6
1985	54.2	45.5	52.5
1986	53.4	47.1	52.2
1987	56.4	48.1	54.5

SOURCE: Sheils et al. (1990).

TABLE II.3

AFDC PARTICIPATION RATES ESTIMATED BY RUGGLES AND MICHEL WITH CPS DATA
(with Error Adjustment)

Year	Participation Rate
1967	41
1970	63
1973	85
1976	87
1981	82
1982	76
1983	78
1984	82

SOURCE: Ruggles and Michel (1987).

data collection and data coding that plagued estimates of the AFDC participation rate in many earlier studies. In addition, they adjusted their rates to remove ineligible persons who received AFDC payments erroneously.

Ruggles and Michel found that AFDC rates increased dramatically from 1967 to 1976, and generally declined since then, with two slight upturns in 1981 and 1984. Ruggles and Michel offered several hypotheses to explain the decline in the rates since the mid-1970s. First, they noted that eligibility among families in multi-generation households increased without a corresponding increase in their participation. Such families are likely to have access to the assets and resources of the other household members and thus have less need for AFDC benefits. Second, they noted that changes in the economy (weakening in the late 1970s and strengthening in the mid-1980s) interacted with the restrictive eligibility criteria in the early 1980s. They surmised that the number of eligibles increased due to the recession, but not as much as would have been the case in the absence of the legislative changes to the program. They also surmised that the more restrictive eligibility criteria, along with the increased complexity of program administration and the resultant delays in processing applications, combined to delay the impact of the recession on participation while also reducing the AFDC participation rate.

III. METHODOLOGY

This chapter presents our methodology for estimating the series of FSP participation rates. We estimated rates for a selected month in the even years between 1976 and 1990 for all three units of analysis--individual, household, and benefits. The selected month of the analysis was determined by the availability of the FSP caseload data. We also estimated rates by demographic and economic characteristics of eligible individuals, such as age, household composition, and poverty level.

Below, we describe the data and approach that we used to estimate the number of FSP participants--the numerator of the participation rate ratio. We then describe the data and approach that we used to estimate the number of FSP eligibles--the denominator of the participation rate ratio. We also discuss the FSP eligibility criteria that FSP administrators use to make eligibility and benefit determinations and how we modeled those criteria to estimate eligibility with CPS data. Finally, we discuss how we compensated for the information not collected in the CPS but used by program administrators in determining FSP eligibility.

A. MEASURING FOOD STAMP PROGRAM PARTICIPANTS

We used FSP administrative data from two sources to estimate the number of participants in our participation rates. The first source is the Food Stamp Program Statistical Summary of Operations (hereafter referred to as Program Operations data). These data provide the count of persons and households that were issued benefits and the total dollar value of the benefits issued for each year and month of the analysis. The second source is the sample of food stamp case records that USDA uses in its annual reports on the *Characteristics of Food Stamp Households* (U.S. Department of Agriculture, 1990, and references noted therein). Prior to 1980, USDA field staff obtained the samples of case records from a nationally representative sample of households certified to receive food stamps. Since 1980, USDA has derived the samples from the Integrated Quality Control System (IQCS)--a system of ongoing case records reviews designed to measure payment error rates. We used

the sample of case records in each year to calculate the distribution of persons, households, and benefits across various demographic and economic characteristics. Appendix C lists the sample sizes for the case records surveys for each year of the analysis.

As discussed above, one of the major reasons for the disparity among existing participation-rate estimates is that many estimates use household survey data to estimate the number of *participants.* Household survey data substantially underreport the extent of participation. Given this substantial underreporting, we used FSP administrative data to estimate the number of participants in this analysis.

B. MEASURING FOOD STAMP PROGRAM ELIGIBLES

We used the March CPS to estimate the number of eligible persons, households, and benefits for each year of the analysis. In essence, we modeled FSP eligibility criteria to determine which households on the CPS were eligible for the program, the number of eligible persons in those households, and the potential benefits to which each eligible household was entitled. The model relied on a simulation procedure in which we quantified the program rules and applied them to each dwelling unit in the CPS in each year. Appendix A provides a detailed discussion of our model of program eligibility.

The eligibility criteria vary from year to year, as discussed below. However, in general, the criteria apply to (1) income limits and to (2) asset limits that vary according to the size of the food stamp unit and the characteristics of the unit (such as the presence of an elderly member). The basic structure of the Food Stamp Program has remained intact since the implementation of the Food Stamp Act of 1977 (PL 95-113). The major structural change instituted under the 1977 Act was the elimination of the food stamp coupon purchase requirement. Prior to the 1977 Act, households deemed eligible for food stamps were required to purchase coupons whose face value varied according to household size and net income. After the 1977 Act was implemented, the face value of the coupons issued to households became the difference between the maximum food stamp benefit

and 30 percent of net income. Below, we summarize the eligibility criteria before and after the 1977 Act. Appendix B contains a summary of the eligibility criteria for each year of the analysis.

1. Eligibility Criteria Prior to the Food Stamp Act of 1977

Prior to the implementation of the 1977 Act, the Food Stamp Program imposed a net income test and an asset test in determining need. Households that consisted entirely of AFDC or SSI recipients were determined to be eligible regardless of their income and assets. For all other households, net income was to be below maximum monthly limits established by USDA, which varied according to household size and by state of residence (Alaska, Hawaii, and all other states). In September 1976, the allowable limit on net income for a household of 4 in the continental United States was $553; in February 1978, it was $580. Countable assets were limited to $1,500 for households without elderly members and for elderly single households, and limited to $3,000 for households of 2 or more with at least one elderly member.

Net income was defined as gross income less deductions for work-related expenses, dependent care, medical expenses, shelter expenses, payroll taxes, education tuition and fees, casualty or loss, alimony, and expenses incurred to house boarders and live-in attendants. Countable assets included bank accounts, stocks and bonds, second homes, and recreational vehicles, but excluded the principal residence, one automobile used for household transportation, vehicles necessary for producing income, personal effects and household goods, income-producing property, tools for a trade, life insurance policies, and inaccessible resources.

Households deemed eligible for food stamps were required to purchase coupons whose face value varied according to household size and by geographic location. The cost of these coupons varied according to household size and net income and by geographic location. In 1976, a household of size 4 in the continental United States whose net income equalled $100 paid $25 for coupons valued at $166. In 1978, the same household paid $25 for coupons valued at $174.

2. Eligibility Criteria After the Food Stamp Act of 1977

The 1977 Act eliminated the requirement that food coupons be purchased, changed the definition of net income, changed the determination of net income limits, and deleted automatic eligibility for AFDC and SSI households. It also assigned minimum benefits to single-person households and households of 2 persons. Subsequent legislation introduced a gross income test for nonelderly, nondisabled households, reintroduced automatic eligibility for certain recipients of cash assistance,' and raised the asset limit to $2,000 for households without elderly members in 1986.

Gross income was defined as all cash income of members of the food stamp unit less certain disregards, such as the earnings of students under age 18. (The nature of the disregards changed somewhat between 1980 and 1990.) Among households that did not contain an elderly or disabled person, gross income was limited to 130 percent of the monthly federal poverty guidelines each year beginning in 1982.[2] The monthly poverty guidelines for a household of 4 in the continental United States ranged from $621 in August 1980 to $1,009 in August 1990.

Net income was constrained to be less than the monthly federal poverty guidelines each year between 1980 and 1990. In 1980, net income was equal to gross income less the following deductions:

- A standard deduction, whose amount varied across the continental United States, Alaska, and Hawaii
- A deduction for work-related expenses equal to 20 percent of earnings
- A deduction for expenses incurred for the care of dependent children or incapacitated adults, up to a limit

'The Food Security Act of 1985 again granted automatic eligibility for food stamps to households that consisted entirely of AFDC or SSI recipients.

[2]**The** official monthly poverty guidelines are published by the U.S. Department of Health and Human Services (DHHS) and are adjusted each year to account for inflation. The FSP income guidelines based on the poverty guidelines vary **according** to household size, are the same for the contiguous states and the District of Columbia, and vary slightly for Alaska and Hawaii and U.S. territories.

- A deduction for shelter costs in excess of 50 percent of gross income less the previous deductions, up to a maximum placed on the combined value of the shelter and dependent care deductions

In subsequent years, the criteria for determining net income changed somewhat. The standard deduction increased with inflation. The earnings deduction was lowered to 18 percent in 1982 and then in 1986, raised again to 20 percent. A medical deduction was introduced with the 1980 legislation (PL 96-249) to account for the out-of-pocket medical expenses incurred by elderly or disabled persons in the household. The deduction was equal to the total expenses of all elderly or disabled persons in the household in excess of $35. The shelter deduction cap was also eliminated for elderly and disabled households in the 1980 legislation. With the implementation of the Food Security Act of 1985, the shelter deduction limit was separated from the child care limit in 1986 and indexed.

The elimination of the purchase requirement in the 1977 Act changed how benefits to eligible households were determined. The face value of the coupons issued to households became the difference between the maximum food stamp benefit and 30 percent of net income, under the assumption that households should spend no more than 30 percent of their income to purchase food valued at the maximum allotment.[3] The maximum food stamp benefit was initially set equal to the Thrifty Food Plan (TFP) value for a family of 4 with a specific composition and then adjusted for the size of the unit and for economies of scale. It was temporarily reduced to 99 percent of the TFP in late 1982 and 1983, and was again raised to 100 percent of the TFP in 1984. Under the Hunger Prevention Act of 1988, the maximum benefit was incrementally raised above the TFP, reaching 103 percent of the TFP by FY 1991. For a family of 4 in the continental United States, the maximum food stamp benefit ranged from $209 in August 1980 to $331 in August 1990.

[3]There were and are some exceptions to this formula for households that are entitled to $10 or less of food stamp coupons.

3. Methods for Estimating the Missing or Incomplete Information in the CPS

The March CPS is missing several types of information necessary for determining FSP eligibility. In particular, the CPS (1) does not contain information on the food stamp unit, (2) provides only annual income amounts rather than monthly income amounts, (3) lacks asset information, and (4) lacks deductible expenses that are necessary for estimating net income amounts. Below, we summarize how we compensated for the missing information. Appendix A contains more detailed information on how we resolved these deficiencies with the data.

a. Measuring the Food Stamp Unit

The formation of the food stamp unit is a function of the shared purchase and preparation of food in addition to shared living quarters, with some exceptions which varied over our study period. The CPS identifies only persons who share living quarters. Thus, we could not model the food stamp unit because the CPS lacks information on who shares food purchases and preparation. However, we excluded from the unit SSI recipients who receive cash in lieu of food stamp coupons in SSI cashout states. Hence, the food stamp unit in this analysis is: persons who share living quarters excluding those SSI recipients residing in SSI cashout states who receive cash for their food stamp benefits.

b. Allocating Annual Income to Monthly Amounts

We allocated the person-level annual income on the CPS to monthly amounts by using formulas specific to each income source. The formulas were designed to replicate patterns observed in the SIPP. We allocated earnings based on reported weeks of work with the specific periods assigned randomly within the year (subject to the constraint that the periods of work among husbands and wives coincided by at least one month). With some exceptions, we allocated unemployment compensation evenly over reported weeks of nonwork, and allocated asset income and cash welfare

benefits evenly over the year. Finally, we allocated other unearned income within the year according to the person's age and type of income.

We used the estimated monthly person income and the unit designation just described to approximate the gross income of the food stamp unit for the selected month in each year of the analysis. For years in which a gross income test was imposed, we computed gross income as the sum of the total income of all members of the food stamp unit assigned to the selected month.

c. Estimating Asset Balances

We developed a proxy for countable assets based on reported annual income from financial assets. Countable assets were assumed to equal the income from financial assets divided by a rate of return of 6.5 percent. Appendix A discusses the limitations of using this proxy for countable assets.

d. Estimating Net Income

We used a regression model to estimate net income as a function of the unit's earnings, unearned income, gross income, and geographic location for each year. We used the sample of food stamp case records to estimate the regression equation. We estimated the relationship between the characteristics of each food stamp unit and its food stamp net income, and applied the resulting coefficients to the CPS data. Appendix A contains a detailed discussion of the procedure used to estimate food stamp net income.

Using the enhanced CPS data for each year, we determined eligibility for each household in the CPS according to program regulations in effect in the corresponding year and month. Appendix C lists the unweighted counts of households simulated to be eligible for the FSP, along with the original sample sizes for each of the CPS files used in this analysis.

IV. FSP PARTICIPATION RATES: 1976 TO 1990

This chapter presents our estimates of FSP participation rates from 1976 to 1990.' We first discuss the trends in the participation rates among the total eligible population, and then compare the rates for selected demographic and economic subgroups of the population with the overall rates.

The purpose of this time-series study is to provide a consistent, accurate measure of the *trends* in participation rates, rather than to provide the most accurate estimate of any single rate. Indeed, due to limitations with the CPS, the participation rates reported in this report are consistently lower than estimates derived from the SIPP database (as discussed in Appendix A). However, we used the CPS database in this analysis because, unlike the SIPP database, it is available for the entire period from 1976 to 1990. The more precise SIPP-based estimates of eligibles have been used to estimate participation rates in August 1984, August 1985, and January 1988 (see Doyle and Beebout, 1988; Doyle, 1990; and Trippe and Doyle, 1992). They produce participation rates that are 10 to 15 percentage points higher than those based on the CPS data used in this report. For example, the preferred SIPP-based estimate of the individual participation rate in August 1988 is 59 percent, rather than the 49 percent CPS-based estimate reported in this report (see Table IV.1).

A. TRENDS IN AGGREGATE FSP PARTICIPATION RATES

Participation rates in the FSP increased between 1976 and 1978, and then increased substantially between 1978 and 1980, as shown in Table IV.1 and illustrated in Figure IV.l. Participation rates remained relatively constant between 1980 and 1988, but again increased between 1988 and 1990. Participation rates for individuals increased by 7 percentage points between 1976 and 1978, increased by over 16 percentage points between 1978 and 1980, and changed by no more than 8 percentage points over the entire period from between 1980 to 1988. However, participation rates again rose

'This analysis estimates participation rates for even years only. Thus, the 15-year period between 1976 and 1990 includes rates for 1976, 1978, 1980, 1982, 1984, 1986, 1988, and 1990.

TABLE IV.1

MONTHLY NUMBER OF ELIGIBLES AND PARTICIPANTS AND PARTICIPATION RATES FOR INDIVIDUALS, HOUSEHOLDS, AND BENEFITS: 1976-1990

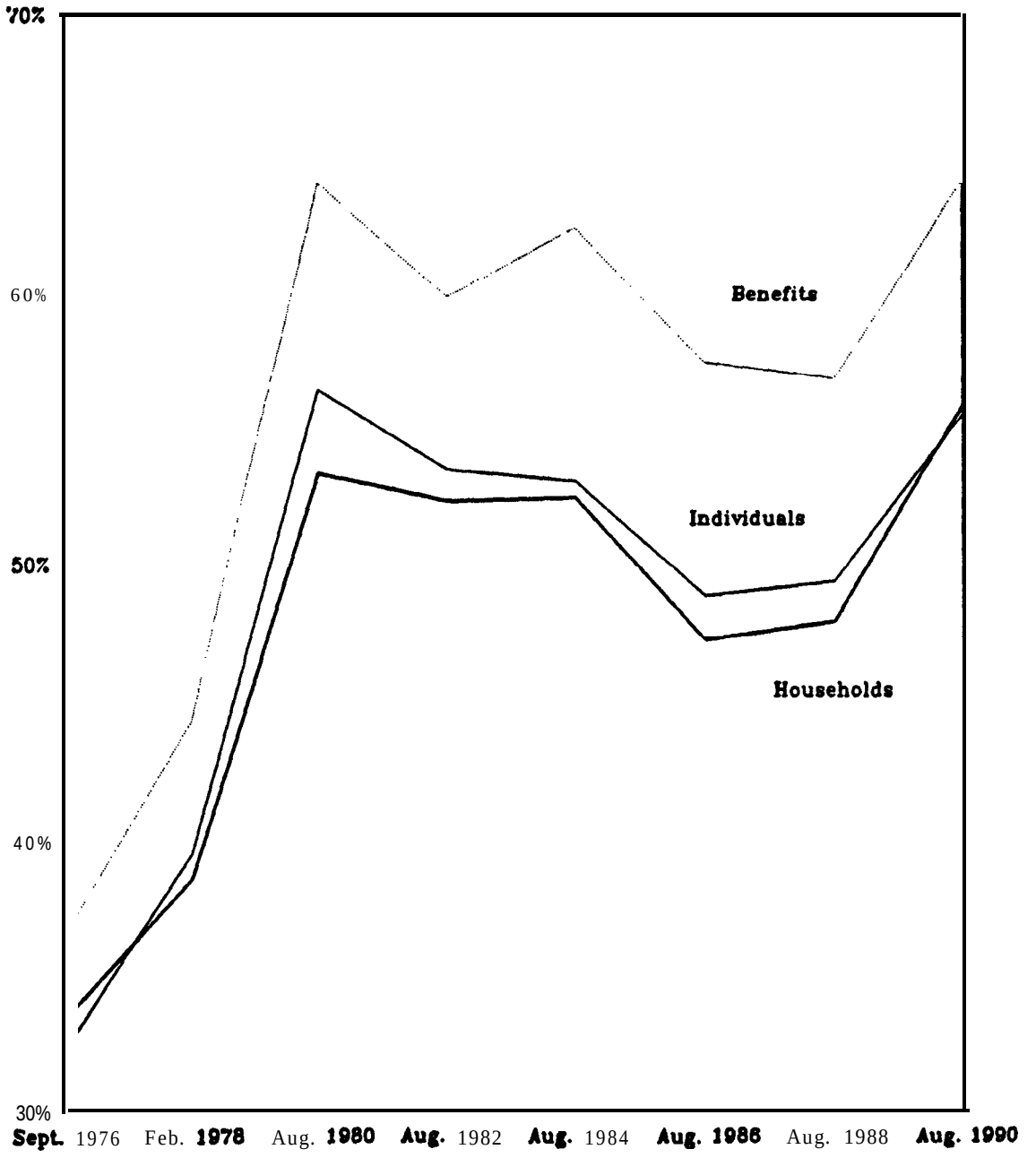
	Participation Rates							
	Sept. 1976	Feb. 1978	Aug. 1980	Aug. 1982	Aug. 1984	Aug. 1986	Aug. 1988	Aug. 1990
Eligibles (CPS)				-- Thousands --				
Individuals	49,200	38,948	35,819	38,481	37,751	39,044	37,206	36,811
Households	15,888	13,706	13,839	14,328	13,987	15,032	14,640	14,309
Benefits	$1,027,127	898,328	1,078,732	1,312,883	1,349,598	1,499,189	1597,915	1,855,529
Participants (Program Operations)								
Individuals	15,880	15,387	20,185	20,548	19,990	19,069	18,358	20,396
Households[a]	5,308	5,286	7,372	7,487	7,324	7,102	7,016	7,973
Benefits	$375,461	398,066	689.38 1	785,658	841,442	860,472	907,117	1,188,808
Participation Rates (CPS and Program Operations)				-- Percent --				
Individuals	32.3	39.5	56.4	53.4	53.0	48.8	49.3	55.4
Households	33.4	38.6	53.3	52.3	52.4	47.3	47.9	55.7
Benefits[b]	36.6	44.3	63.9	59.8	62.4	57.4	56.8	64.1
Participation Rates (SIPP and Program Operations)				-- Percent --				
Individuals	NA	NA	NA	NA	65.9	NA	59.0	NA
Households	NA	NA	NA	NA	60.0	NA	56.0	NA
Benefits	NA	NA	NA	NA	79.5	NA	66.7	NA

SOURCE: Counts for participants are from the Food Stamp Program Statistical Summary of Operations (Program Operations). The CPS-based estimates of eligibles were derived from simulations based on the CPS analysis file developed by MPR from the March 1977, 1979, 1981, 1983, 1985, 1987, 1989, and 1991 CPS files. The unweighted sample sizes are listed in Appendix C. The SIPP-based estimates of participation rates are from Doyle and Beebout (1988), and from Trippe and Doyle (1992).

[a]The numbers of participating households for September 1976 and February 1978 are not available from the Program Operations data. We estimated these numbers by applying the ratio of administrative caseload data to Program Operations data for benefits, and to administrative caseload data for households.

[b]The benefit rate for 1976 and 1978 (pre-EPR periods) is based on the net benefit (maximum benefits-purchase requirement). Hence, the benefit rates are consistent over the 1976 to 1988 period.

FIGURE IV.1
FSP MONTHLY PARTICIPATION RATES: 1976-90



sharply between 1988 and 1990, increasing by 6 percentage points over two years. Hence, the FSP has reached a much greater proportion of its target population in the years since 1980 than before 1980, and is reaching an even greater proportion of eligible persons in 1990 than it did in the 1980s.

Figure IV.1 shows that the trend in rates was consistent among the three units of measurement: the benefit rate was consistently higher than the individual rate and the household rate, and the individual rate was consistently higher than the household rate. This consistent pattern indicates that households with higher benefit levels, and thus greater need, are more likely to participate than households with lower benefit levels. It also implies that larger households are more likely to participate than smaller households. This pattern has also been found in other research: Trippe and Doyle, 1992; Doyle, 1990; Allin and Beebout, 1989; Trippe, 1989; and Ross, 1988.

B. TRENDS IN PARTICIPATION RATES BY SELECTED DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

In this section, we discuss how the participation rates for subgroups of the eligible population compare with rates for the total eligible population. In most cases, ***trends*** for the subgroups follow the same patterns as trends for the total population. That is, when aggregate rates go up, rates for selected groups of persons, such as elderly, children, or single families, go up; when aggregate rates go down, rates for selected groups of persons go down. However, the ***rates*** for the subgroups of persons are consistently higher or lower than the overall rates for persons. These comparisons are discussed in this section.

1. Trends by Demographic Characteristics

a. Household Size

Participation rates for each household size follow the same general trends as the rates for all households, as shown in Table IV.2 and Figure IV.2. However, smaller households tend to participate at lower rates than average, and larger households tend to participate at higher rates than average. In their multivariate analysis, Martini (1992) found similar results for August 1985

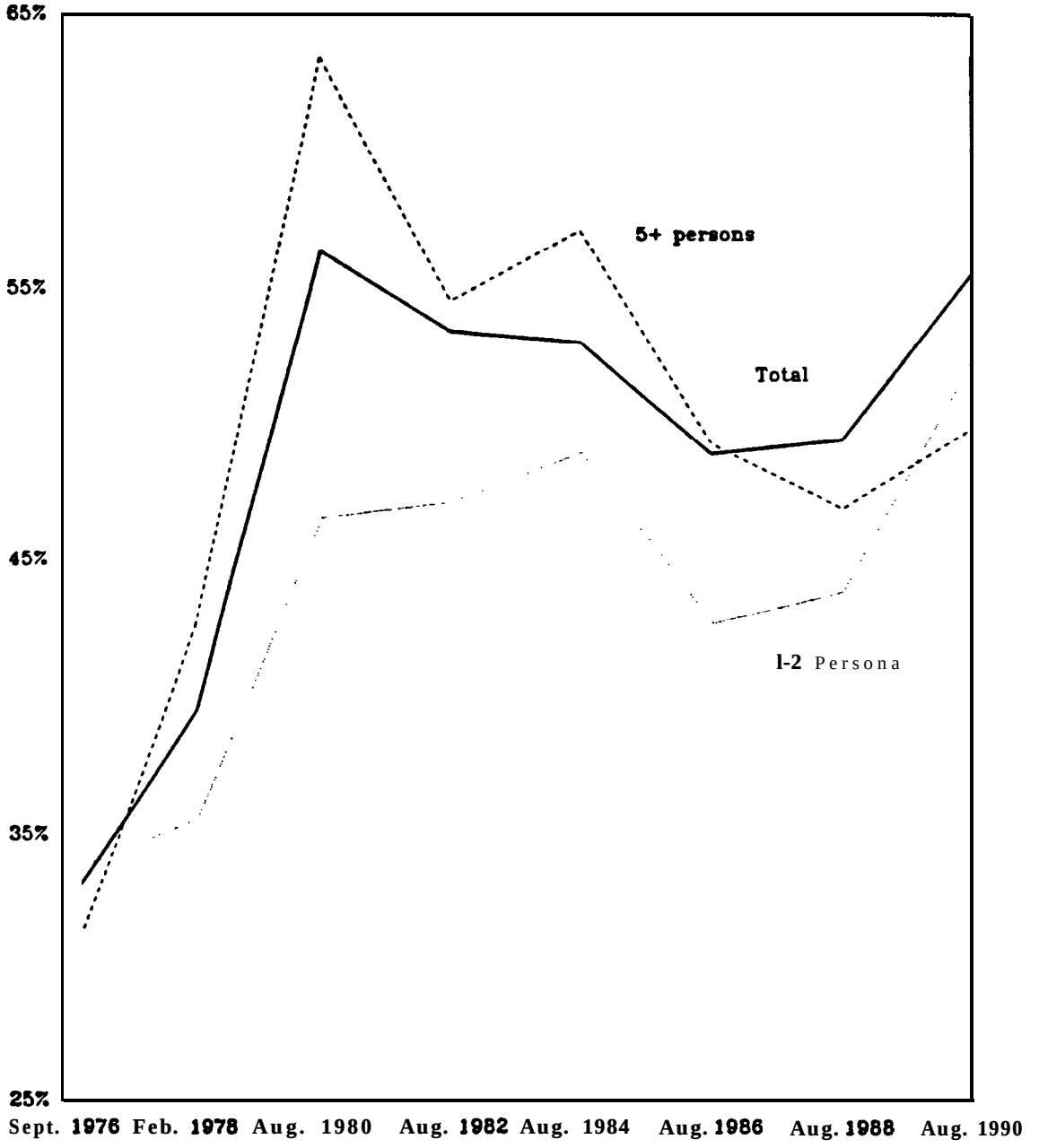
TABLE IV.2

HOUSEHOLD PARTICIPATION RATES BY HOUSEHOLD SIZE:
1976-1990

	Month/Year							
	Sept. 1976	Feb. 1978	Aug. 1980	Aug. 1982	Aug. 1984	Aug. 1986	Aug. 1988	Aug. 1990
Household Size (Number of Persons)	Household Participation Rates (Percent)							
1	31.7	33.2	44.5	47.6	50.6	41.1	41.5	47.6
2	36.3	38.9	49.8	46.3	46.4	45.1	47.6	60.6
3	40.8	45.5	65.3	64.7	59.0	56.5	63.2	72.9
4	31.7	37.5	59.8	57.5	53.4	55.5	50.7	57.4
5	28.3	41.2	63.3	65.4	57.7	50.9	46.9	60.4
6+	30.8	43.9	63.6	46.3	56.4	47.5	46.7	38.7
Total	33.4	38.6	53.3	52.3	52.4	47.3	47.9	55.7
Average Household Size								
Eligibles	3.1	2.8	2.6	2.7	2.7	2.6	2.5	2.6
Participants	3.0	2.9	2.7	2.7	2.7	2.7	2.6	2.6

SOURCE: Counts for participants are from the Food Stamp Program Statistical Summary of Operations. Estimates for eligibles were derived from tabulations based on the CPS analysis file developed by MPR from the March 1977, 1979, 1981, 1983, 1985, 1987, 1989, and 1991 CPS files. The unweighted sample sizes are listed in Appendix C.

FIGURE IV.2
PARTICIPATION RATES BY HOUSEHOLD SIZE



based on SIPP data. Martini concluded that smaller households tend to participate at lower-than-average rates for two reasons: (1) they might have more resources available to them than is revealed by their income and assets, and (2) they typically include elderly persons, and elderly persons tend to participate at lower rates than nonelderly persons.

Although this pattern of higher participation rates as household size increases is true for most years in the time series, the pattern does not hold in 1988 and 1990. In these years, participation rates among persons in the largest households and persons in the smallest households were lower than average. This pattern is seen in other research, in which participation rates peak for households that contain three persons (see Doyle, 1990; Trippe and Doyle, 1992; and Martini, 1992). Although rates decline with household sizes of more than three persons, rates for larger households are still higher than the rates for single-person households.

b. Age of Persons in the Household

The trend in participation rates for elderly persons, children, and adults also closely follows the trend in rates for all persons, as shown in Table IV.3 and Figure IV.3. However, the rates for elderly persons are much lower than average (by 10 to almost 30 percentage points), the rates for children are much higher than average (by 5 to 20 percentage points), and the rates for adults are slightly lower than average (by 1 to 5 percentage points) in every year of the analysis.

Participation rates for elderly living *alone* are consistently higher than for elderly living with *others* (by 6 to 14 percentage points), but are much lower than overall rates. These results are consistent with the findings of other studies (see Trippe and Doyle, 1992; and Martini, 1992).

Participation rates for elderly persons are consistently lower than the overall rates because elderly persons tend to live in smaller households, have higher per-capita incomes, and receive smaller monthly benefits than others--all of which are characteristics associated with low participation rates. Martini (1992) analyzed whether being elderly or living alone had a greater effect on reducing the probability of FSP participation. They found that, overall, living alone had a larger

TABLE IV.3

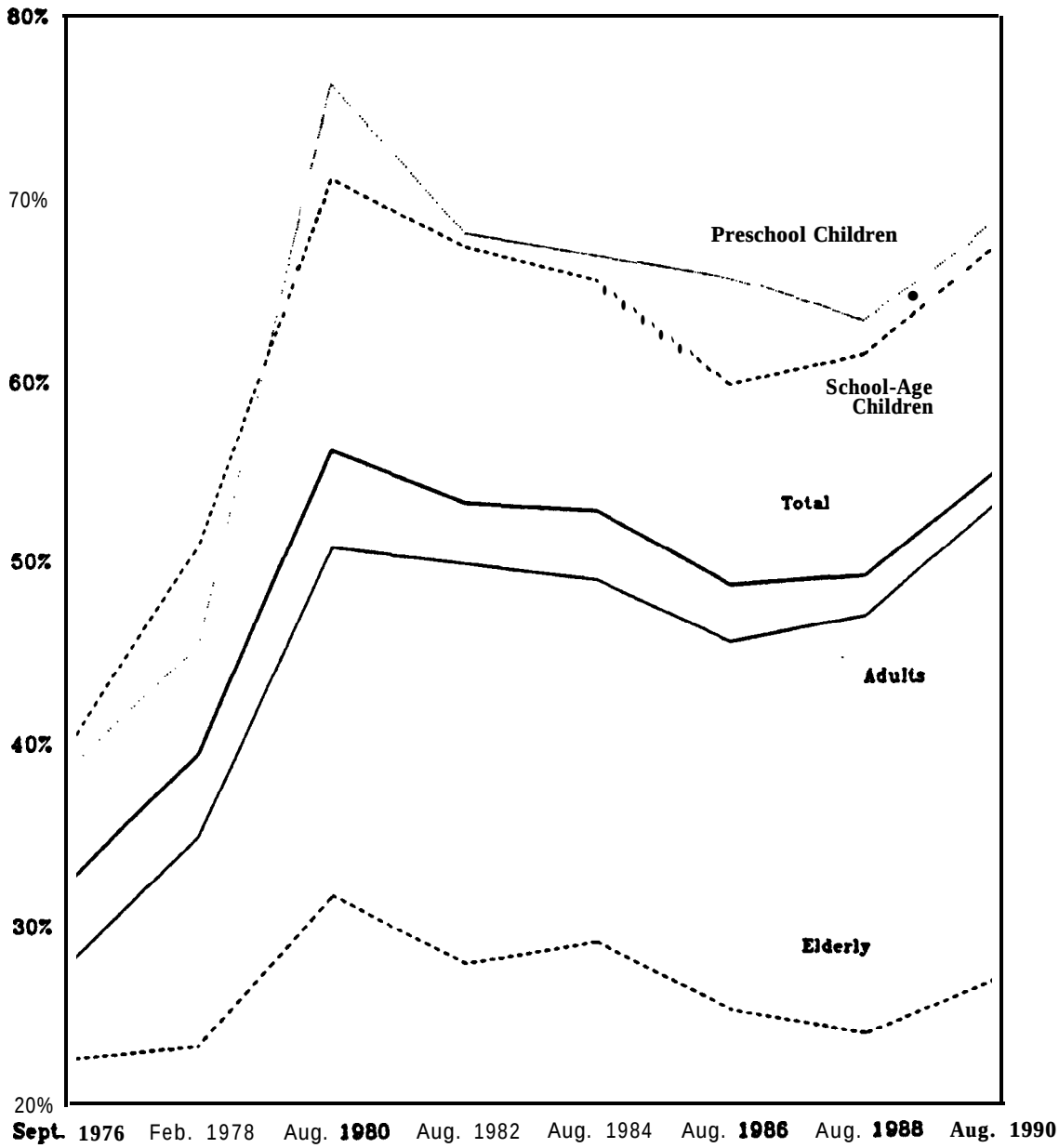
INDIVIDUAL PARTICIPATION RATES BY SELECTED DEMOGRAPHIC CHARACTERISTICS: 1976-1990

	Individual Participation Rates (Percent)							
	Sept. 1976	Feb. 1978	Aug. 1980	Aug. 1982	Aug. 1984	Aug. 1986	Aug. 1988	Aug. 1990
Elderly								
Total	22.5	23.3	31.8	28.0	29.2	25.4	24.1	27.3
Living Alone	26.0	28.1	36.7	35.0	36.4	28.0	29.2	31.4
Living with Others	19.6	19.3	26.6	21.6	21.6	22.2	17.9	22.0
Children under Age 18	39.3	49.3	72.8	67.7	66.0	61.7	62.1	67.9
Preschool (under age 5)	38.5	45.4	76.4	68.2	66.9	65.7	63.4	68.7
School-age (age 5-17)	39.6	50.8	71.2	67.4	65.7	59.9	61.5	67.5
Adults Ages 18 to 59	27.7	35.0	50.8	50.0	49.1	45.7	47.1	53.6
Household Composition[a]								
Single Adults with Children:	54.6	56.4	74.8	64.5	63.9	58.0	64.6	72.9
Single female adults with children	NA	58.1	NA	66.8	67.3	61.4	69.0	76.8
Single male adults with children	NA	27.4	NA	35.0	24.0	22.0	21.4	34.1
Two or More Adults with Children	24.9	35.7	54.3	52.6	55.8	53.0	47.7	49.2
Households without Children	22.7	24.3	36.9	40.7	33.3	30.2	30.7	36.9
Race/Ethnicity of Head[a]								
White Non-Hispanic	NA	32.6	NA	36.6	44.0	41.8	43.5	48.5
Black Non-Hispanic	NA	53.2	NA	86.1	72.8	66.3	63.4	72.7
Hispanic	NA	43.7	NA	50.2	50.0	39.2	43.9	49.9
Other	NA	38.0	NA	73.9	48.5	63.6	43.1	42.1
Gender								
Male	NA	36.9	NA	50.4	50.7	46.8	46.2	52.0
Female	NA	41.5	NA	55.7	53.6	50.4	51.7	57.9
Total	323	39.5	56.4	53.4	53.0	48.8	49.3	55.4

SOURCE: Counts for participants are from the Food Stamp Program Statistical Summary of Operations. Estimates for eligibles were derived from tabulations based on the CPS anaiysii file developed by MPR from the March 1977, 1979, 1981, 1983, 1985, 1987, 1989, and 1991 CPS flies. The unweighted sample sizes are listed in Appendix C.

[a]FSP participant data are not available (or contain too many missing values) for 1976 and 1980 for those entries marked as NA.

FIGURE IV.3
PARTICIPATION RATES
BY AGE



effect than being elderly, although being elderly also had a substantial effect. Ponza and Wray (1990) found that elderly persons often do not participate for three reasons: (1) because they believe that they do not need the assistance, (2) they would rather rely on other sources, or (3) they believe that they are ineligible.

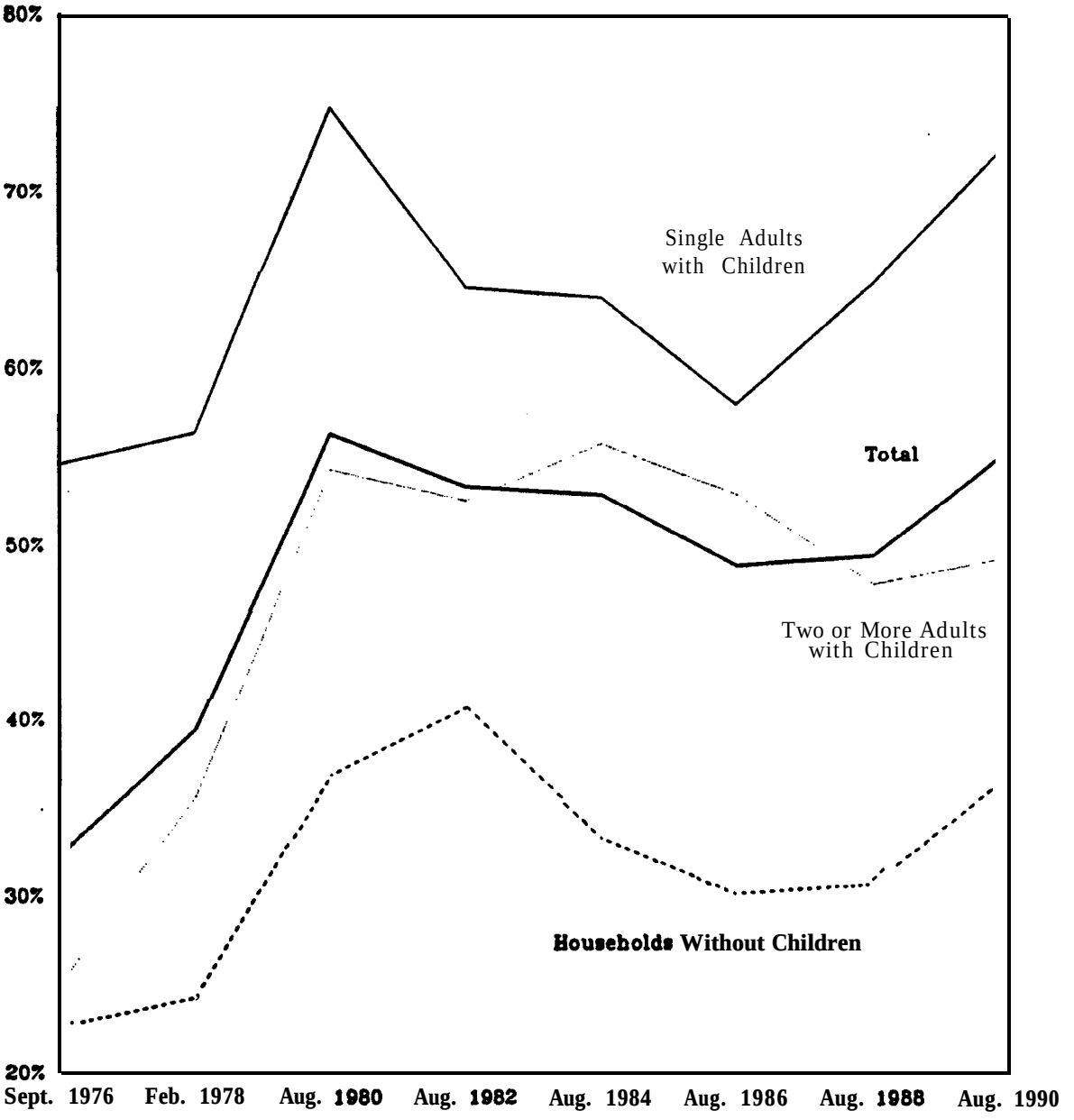
The participation rate for elderly persons was closer to the average rate before 1980 than after 1980. Before 1980, the rate among elderly persons was only 10 to 15 percentage points lower than average. From 1980 to 1990, the rate was 20 to 30 percentage points lower. The rate among elderly was lower as a proportion of the rate among total eligibles from 1980 on, due to provisions in the 1977 Act that increased the number of elderly eligibles. This issue is discussed in the next chapter.

Participation rates among children are consistently higher than average because, according to Martini (1992), a high correlation exists between households that receive AFDC or General Assistance and the presence of children in those households. Hence, it is the receipt of these other forms of public assistance that has the greatest effect on FSP participation rates among children.

c. Household Composition

Figure IV.4 shows that the trend in participation rates for subgroups based on household composition moves with the trend for all persons. Participation rates for single adults with children almost exactly mirror the rates among all persons, but the rates are 10 to 20 percentage points higher than average. Participation rates for households without children follow the same general pattern as the total rates, but are 10 to 20 percentage points lower than average. Among the persons in households that consist of single adults with children, the rates for households with **single** ***female*** adults are much higher than for households with single ***male*** adults. One reason that these rates are higher is that the single female adult households are more closely correlated with AFDC households, which have higher-than-average participation rates.

FIGURE IV.4
PARTICIPATION RATES
BY HOUSEHOLD COMPOSITION



d. Race and Ethnic Origin

Participation rates by race and ethnic origin are not available for 1976 and 1980 because caseload numbers are not available for those years. However, among the rates shown, black non-Hispanics had the highest participation rates in all years of the participation rate series. Hispanics had the second highest rates for most years, and white non-Hispanics had the lowest rates. Rates for the group "Other" should be viewed cautiously because the definitions may not be consistent in all years.

In 1986 and 1988, rates for Hispanics were much lower than in previous years, and fell below the rates for white non-Hispanics in 1986. The lower rates for Hispanics may reflect increases in eligibility among newly legalized aliens, with slight increases in participation (see U.S. Department of Agriculture, 1990, for a discussion of changes in immigration laws).[2]

Although the participation rates among the racial/ethnic groups differ, Martini (1992) found that differences among the participation rates diminish when other household characteristics are held constant.

e. Gender

Participation rates for females are consistently 3 to 5 percentage points higher than the rates for males in all years for which data are available (caseload data on gender are not available for 1976 and 1978). This finding is consistent with other studies (see Allin and Beebout, 1989; and Trippe and Doyle, 1992).

2. Trends by Economic Characteristics

Participation rates for various economic groups follow the same general trend as the total population, as shown in Table IV.4 and illustrated in Figure IV.5. However, as with the demographic groups, participation rates for different economic groups tend to be consistently higher or lower than average rates.

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[2]The Immigration Reform and Control Act (IRCA, PL99-603) of 1986 liberalized the legalization of aliens.

TABLE IV.4

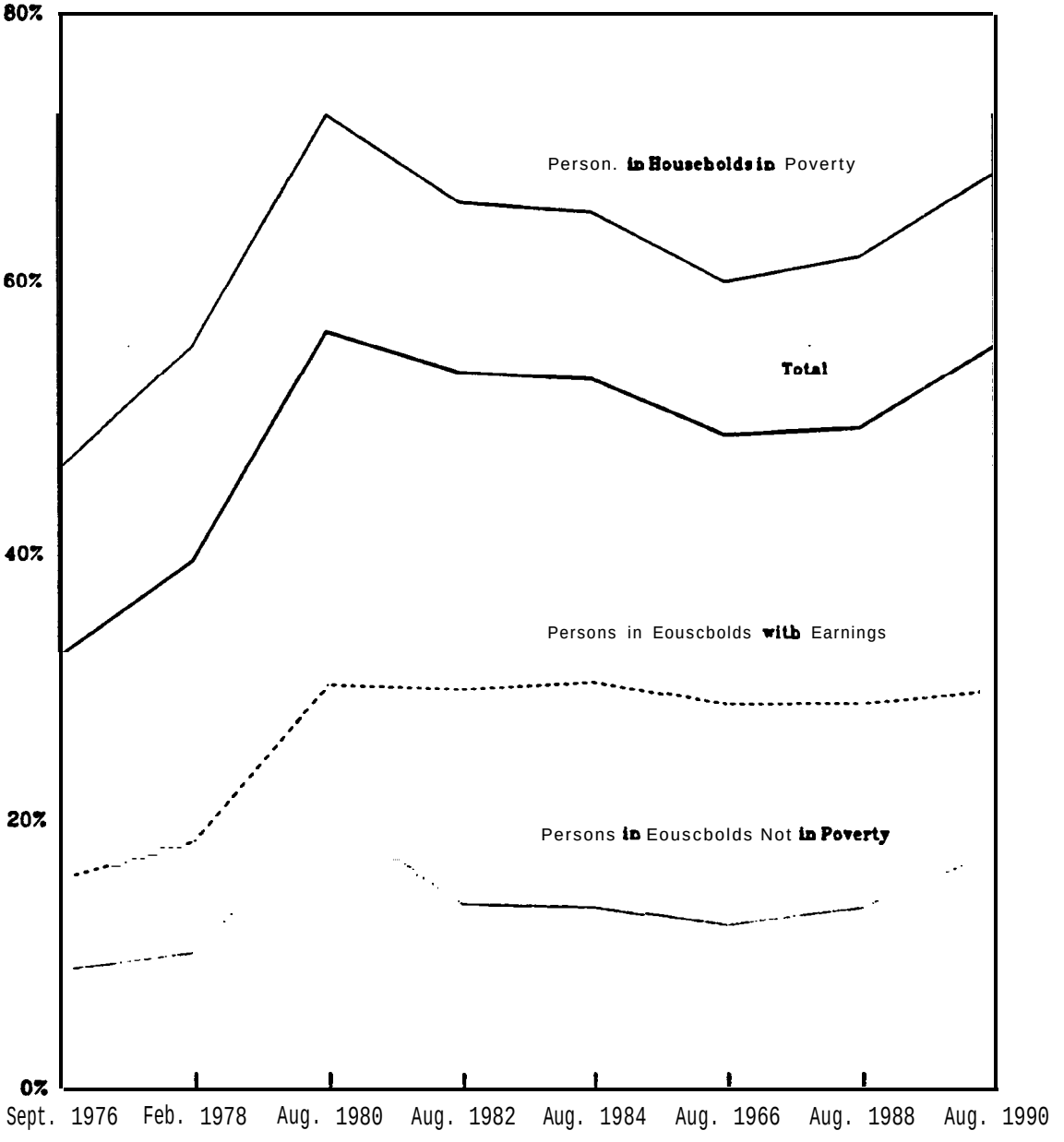
INDIVIDUAL PARTICIPATION RATES BY SELECTED ECONOMIC CHARACTERISTICS: 1976-1990

	Individual Participation Rates (Percent)							
	1976	1978	1980	1982	1984	1986	1988	1990
Household Income as a Percent of Poverty								
Total ≤ 100%	46.1	55.2	72.6	66.1	65.4	60.2	62.0	68.3
Total > 100	8.9	10.3	20.7	13.8	13.7	12.4	13.6	17.7
Household Income from[a]								
Earnings	15.6	18.5	30.1	29.9	30.4	28.7	28.8	29.7
Unemployment compensation	NA	29.8	NA	23.9	24.4	24.2	19.6	25.7
Monthly Household Benefits as a Percent of Maximum Benefit								
1 - 25%	11.4	18.2	27.8	27.5	20.8	22.5	22.9	24.9
26 - 50%	37.4	45.6	62.4	50.5	53.5	46.1	47.3	46.5
51 - 75%	52.2	62.6	85.7	78.6	69.5	64.8	65.7	65.9
76 - 99%	48.5	56.3	55.3	77.0	95.1	77.1	75.3	90.5
100%	12.6	21.9	38.9	35.7	39.5	41.2	38.0	47.5
Total	32.3	39.5	56.4	53.4	53.0	48.8	49.3	55.4

SOURCE: Counts for participants are from the Food Stamp Program Statistical Summary of Opera- tions. Estimates for eligibles were derived from tabulations based on the CPS analysis file developed by MPR from the March 1977, 1979, 1981, 1983, 1985, 1987, 1989, and 1991 CPS files. The unweighted sample size are listed in Appendix C.

[a]FSP participant data are not available (or contain too many missing values) for 1976 and 1980 for those entries marked as NA.

FIGURE IV.5
PARTICIPATION RATES
BY SELECTED ECONOMIC CHARACTERISTICS



a. Poverty Level

As expected, participation rates in all years were much higher for persons in households whose gross income was *below* the poverty level than for persons in households whose gross income was *above* the poverty level, as illustrated in Figure IV.5.[3] Participation rates for persons living in households in poverty were 11 to 16 percentage points *higher* than average, while rates for persons living in households not in poverty were 23 to 40 percentage points lower than average. The overall trend in participation rates among persons in households in poverty is consistent with the trend among the poverty population found in Trippe and Beebout (1988).

b. Income Sources[4]

The pattern of participation rates among persons in households with earnings are similar to the pattern of rates among all persons, but are much lower and vary less, as shown in Figure IV.5 After a substantial increase between 1978 and 1980 (an increase of 12 percentage points), the participation rate for persons in households with earnings remained almost constant through 1990.

The participation rates for persons in households that received unemployment compensation were also lower than average in all years for which data were available. However, because the sample size for persons in households with unemployment compensation was small, these estimates should be interpreted with caution.

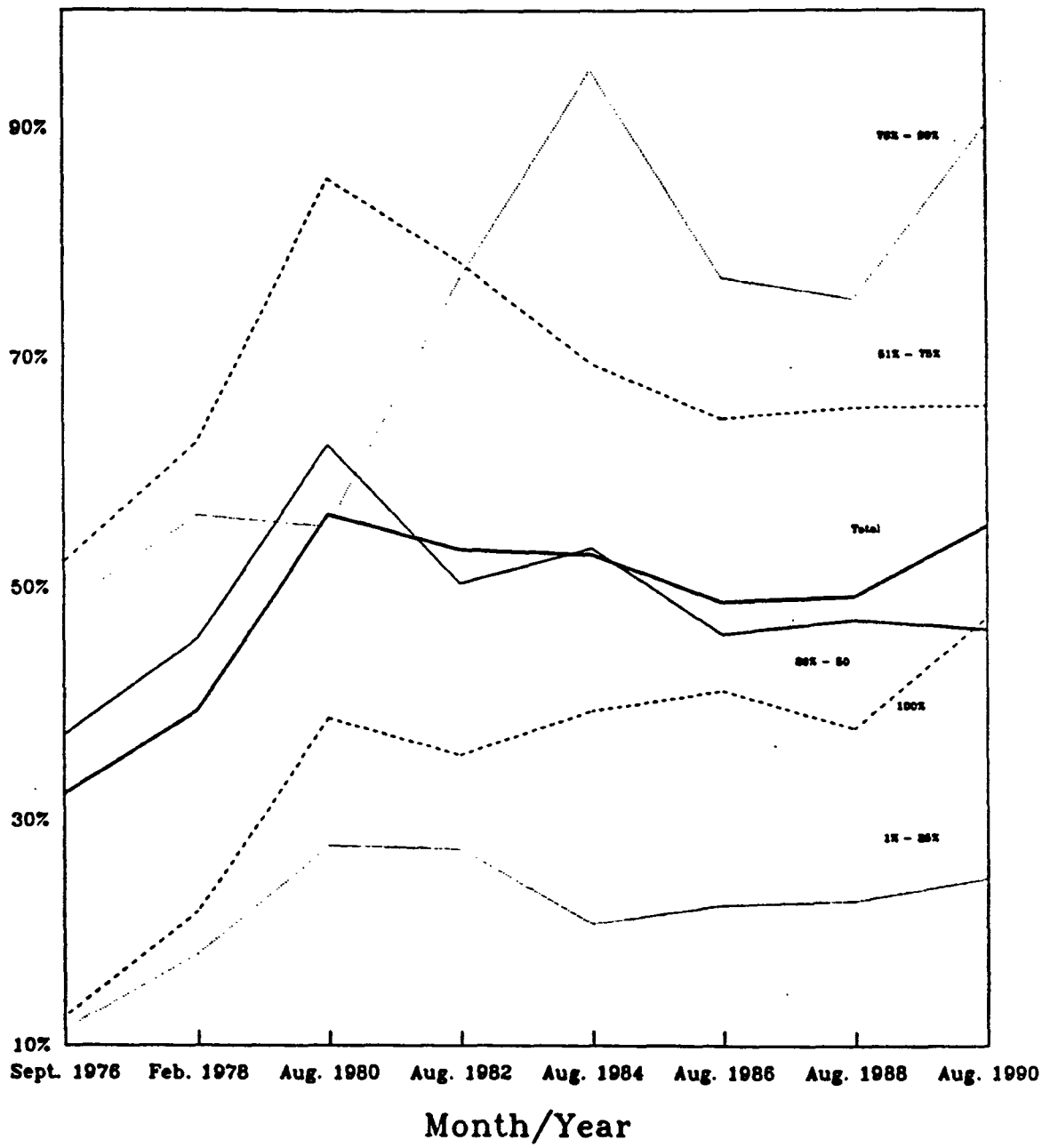
c. Benefit Levels

Figure IV.6 shows the trend in participation rates by FSP benefit levels as a percent of the maximum benefit. Persons eligible for the lowest benefit levels (between 1 and 25 percent of the maximum benefit) participate at lower rates than persons eligible for higher benefit levels. In

[3]Other studies support this finding. See, for example, Allin and Beebout (1989), Doyle (1990), and Trippe and Doyle, 1992.

[4]In this analysis, we did not estimate participation rates among persons reporting AFDC, SSI, or General Assistance because of the substantial underreporting of assistance from these programs in the CPS.

FIGURE IV.6
PARTICIPATION RATES BY FSP BENEFIT
LEVELS AS A PERCENT OF MAXIMUM BENEFIT



general, participation rates are higher among persons with relatively large potential benefits than among persons with relatively small potential benefits. However, persons in households eligible for 100 percent of the maximum benefit participate at rates below average. This pattern is found in other studies and is likely due to measurement problems among the lowest income group (see Trippe and Doyle, 1992).

The other exception from the overall trend by benefit level is among persons in households with benefits between 75 and 99 percent of the maximum benefit. These households participate at rates that are lower than rates among persons eligible for benefits between 51 and 75 percent of the maximum benefit in 1976, 1978, 1980, and 1982. In addition, participation rates among persons in the 76 to 99 percent of the maximum benefit range do not follow the same pattern as other groups. For example, while average participation rates increased between 1978 and 1980, rates among this group declined. Then, while average rates declined between 1980 and 1984, rates among this group increased. Martini (1992) found similarly unusual patterns of participation rates in intermediate intervals of the benefit distribution for observed participation rates. Martini suggests that a possible explanation for the unusual patterns in the observed rates is that certain benefit levels imply different household sizes. The patterns do not show up in predicted participation rates because the latter are computed for the average household size.

Martini also examined the overall relationship between benefit levels and participation rates. He found that the relationship between the FSP benefit amount and participation in the program is positive overall. However, when income, household size, and other demographic and economic characteristics are held constant, the net effect of the benefit amount on participation is rather small.

V. CAUSES OF THE TRENDS IN FSP PARTICIPATION RATES

This chapter examines the reasons behind the observed trends in FSP participation rates between 1976 and 1990. As discussed in Chapter IV, participation rates increased between 1976 and 1978, increased substantially between 1978 and 1980, and then remained relatively constant from 1980 to 1988. Rates again increased between 1988 and 1990. The substantial rise in participation rates from 1978 to 1980 was due to major changes made to the FSP under the Food Stamp Act of 1977.

Participation rates change when the rate of growth in the number of participants differs from the rate of growth in the number of eligibles. Changes in FSP legislation, economic conditions, and other programs affect the rate of growth among participants and eligibles, and thus cause participation rates to change. Since these influences often occur simultaneously, it is difficult to sort out their separate effects on participation rates. However, in most cases, one of the influences dominates the others, causing participation rates to change in a particular direction. Below, we describe how each of the influences affected the number of participants and eligibles, causing the observed trends in participation rates between 1976 and 1990. Table V.l summarizes the dominant influence on each change in the participation rate.

A. CHANGES IN FSP LEGISLATION

A major influence on participation rates has been changes in FSP legislation. Congress passes legislation in an attempt to balance competing program objectives against political and economic forces. For example, Congress has sought to find the appropriate balance between ensuring that the most needy households receive assistance and controlling budgetary expenditures. Legislative changes may be restrictive or expansionary, and may affect the number of eligibles, participants, or both. The legislative changes that had the greatest effect on participation rates are described in this section.

TABLE V.1

SUMMARY OF MAJOR INFLUENCES ON FSP PARTICIPATION RATES: 1976 to 1990

Period of Participation Rate Change	Major Influence	Effect on Number of Participants and Eligibles[a]	Direction of Change In Participation Rates
1976 to 1978	Economy (Rising inflation and strengthening economy)	Almost no change in participants. Substantial decrease in eligibles due to the improving economy and rising inflation. Rising inflation resulted in more restrictive asset and income guidelines in real terms.	Up (by 7 percentage points)
1978 to 1980	Legislation (Food Stamp Act of 1977)	Substantial increase in participants as a result of eliminating purchase requirement. Decrease in eligibles as a result of capping income eligibility.	Up (by over 16 percentage points)
1980 to 1982	Economy (Recession)	Almost no change in participants. Substantial increase in eligibles due to more households meeting the income eligibility guidelines.	Down (by about 3 percentage points)
1982 to 1984	NA	NA	No change
1984 to 1986	Legislation (1985 Food Security Act)	Almost no change in participants. Substantial increase in eligibles due to the more generous eligibility criteria.	Down (by about 4 percentage points)
1986 to 1988	NA	NA	No change
1988 to 1990	Medicaid expansion, Legislation (Homeless Assistance Act), IRCA	Substantial increase in participants due to the expansion in the medicaid program, increased outreach and expedited service, and immigration laws granting resident status to certain aliens. Almost no change in eligibles.	Up (by about 6 percentage points)

[a]The effect on the number of participants and eligibles and the direction of the change in participation rates is based on the rates for *individuals* in Table IV.1

1. Food Stamp Act of 1977

Changes made to the FSP under the Food Stamp Act of 1977 were largely responsible for the dramatic rise in participation rates between 1978 and 1980. The 1977 legislation, implemented in late 1978 and early 1979, eliminated the food stamp coupon purchase requirement. Eliminating the purchase requirement meant that households were no longer required to pay a portion of the value of the coupons from their own resources. Instead, they were awarded coupons equal to the "bonus value" of the coupons to which they had previously been entitled, without having to pay anything for the stamps. This change increased the number of participants by making the program more accessible to many already eligible, low-income households. U.S. Department of Agriculture (1981) estimated that the elimination of the purchase requirement alone may have added **3.6** to **4.7** million persons to the program. Table IV.1 showed an increase of 4.8 million participants between February 1978 and August 1980.

In addition to eliminating the purchase requirement, the 1977 legislation also introduced a number of restrictive changes that reduced the number of eligibles. The restrictive provisions also reduced the number of participants somewhat, but the much larger increase in participation from the elimination of the purchase requirement swamped any decrease in participation from the restrictive changes. These provisions, implemented during 1979, included (1) lowering the net income limits to the poverty line, (2) replacing several previously itemized deductions with a standard deduction, and (3) limiting the amounts of the remaining deductions. A major effect was to lower the effective income eligibility cutoff and reduce benefit levels for households that were previously allowed high deductions at the top end of the eligible income distribution. Another restrictive change was the elimination of automatic eligibility for households in which all members received AFDC or SSI income. The U.S. Department of Agriculture (1981) estimated that the restrictive provisions removed 500,000 to 700,000 participants, and made about 3.5 million persons ineligible who would have been eligible to participate before the Act was passed. Our analysis shows a decrease of 3.1 million

eligibles between February 1978 and August 1980. Congress amended the 1977 Food Stamp Act in 1979 and again in 1980 with changes that generally tightened the administration of the program even more.

The net effect of the increase in participants due to the elimination of the purchase requirement and the reduction in the number of eligibles due to the restrictive changes was an overall increase in the participation rate between 1978 and 1980, from 40 percent to 56 percent among individuals.

Although overall participation rates increased by over 16 percentage points between 1978 and 1980, the rates among elderly persons increased only by about 8 percentage points. The smaller increase in rates among elderly persons was probably due to the larger-than-average increase in the number of elderly ***eligibles*** (the denominator of the participation ratio). The increase in elderly eligibles was affected by a provision in the 1979 Amendments to the 1977 legislation that allowed households with elderly persons to deduct the elderly person's excess medical expenses, and which removed the limit on their deductions for excess shelter costs. Although the elimination of the purchase requirement substantially increased the number of elderly participants, the additional increase in elderly eligibles due to the liberalized eligibility requirements dampened the increase in participation rates among elderly persons.

Conversely, the participation rate among children increased by much more than average between 1978 and 1980--almost 24 percentage points, compared with over 16 percentage points. The reason for the greater increase in the rate among children is that the restrictive provisions of the 1977 Act affected households with children more than they did other households. Thus, the decline in the number of eligible children was greater than average, causing the participation rate among children to increase more than average.

2. OBRA of 1981

Between 1980 and 1982, Congress enacted three laws that tightened program eligibility rules or benefit amounts even further than did the 1977 Act. These laws--the Omnibus Budget Reconciliation

Act of 1981, the Food Stamp and Commodity Distribution Amendments of 1981 and the Food Stamp Amendments of 1982--introduced three major restrictions: (1) a limit on gross income at 130 percent of the poverty level for households that did not contain elderly or disabled members, (2) a reduction in the earned income deduction from 20 percent to 18 percent, and (3) the repeal of previously scheduled increases in the dependent care and medical deductions. These rule changes exerted downward pressure on the number of eligibles and, to a lesser extent, on the number of participants. However, the number of eligibles and the number of participants actually increased between 1982 and 1984, due to the more powerful influence of the recession and the weakening economy, as discussed in Section B. Hence, although the restrictive legislation may have lowered the number of eligibles over what it would have been in the absence of the legislation, it was not the dominant influence on rates between 1982 and 1984.

3. 1985 **Food Security Act**

The more generous eligibility requirements introduced under the 1985 Food Security Act, combined with little or no change in the number of participants under an expanding economy, led to a slight decline in participation rates between 1984 and 1986 (by 4 percentage points). Among other changes, the 1985 FSA, implemented in 1986, (1) restored automatic eligibility to households in which all members received AFDC or SSI, (2) separated the shelter and child care deduction limits, (3) increased the asset limits for elderly persons living alone and for households that did not contain elderly members, and (4) restored the earnings deduction rate to 20 percent.

As discussed in Trippe and Doyle (1992), the total number of eligible households increased due to the more generous eligibility criteria of the FSA, but most of those who became newly eligible did not participate, resulting in the overall decline in participation rates. There are several reasons why there was no corresponding increase in the number of participants in the year and a half after the expanded provisions were implemented. First, the economy was still expanding between 1984 and 1986, creating an environment in which households becoming newly eligible due to legislative changes

were less likely to seek assistance. Second, most of the newly eligible households were made eligible by the expanded asset provisions, particularly for households that contained elderly, single persons. Households containing elderly, single persons have historically participated at much lower-than-average rates and have received lower-than-average benefits. Finally, the expanded eligibility criteria were relatively subtle, so it is not too surprising that the increase in eligibles that was simulated in the model, was not reflected by an increase in participants.

4. **The Homeless Assistance Act**

The Stewart B. McKinney Homeless Assistance Act introduced some changes in FSP outreach, benefit levels, and application procedures that may have increased FSP participation among eligibles between 1988 and 1990, contributing to the 6 percentage point rise in participation rates. In particular, the Homeless Assistance Act made changes to the FSP that (1) encouraged homeless persons to participate in the program, (2) increased the availability of expedited service, and (3) changed the definition of the FSP household so that parents with children who live with relatives could form a separate FSP household.

No data are available for determining whether the number of homeless persons participating in the FSP actually increased. However, McConnell (1991) found that households without earnings or shelter costs increased substantially after the Homeless Assistance Act was implemented. McConnell found that these households accounted for over 40 percent of the increase in households entering the FSP between FY 1989 and FY 1990. At least some of the increase in households entering the FSP without earnings or shelter costs is probably due to an increase in the number of homeless "households" entering the program. In addition, McConnell found that the number of households that received expedited service when they entered the FSP more than doubled between FY 1987 and FY 1990. It is also likely that the change in the definition of the FSP household added to the increase in FSP participation, because households with children represent an increasing proportion of the households entering the FSP without shelter costs (McConnell, 1991).

While the Homeless Assistance Act probably contributed to the increase in FSP participation between 1988 and 1990, expansions in Medicaid and changing economic conditions were also determinants. However, it is not clear which of these influences was the major cause of the rise in participation rates between 1988 and 1990.

5. Immigration Legislation

The 1986 Immigration Reform and Control Act (IRCA) may have contributed to the rise in the number of participants between 1988 and 1990, resulting in the increase in participation rates. IRCA granted resident status to two groups of illegal aliens--legally authorized workers and special agricultural workers. As discussed in McConnell (1991), with the removal of the threat of deportation, newly legalized workers may have become more willing to apply for food stamps for their U.S.-born children.

B. SHIFTS IN ECONOMIC CONDITIONS

A second major influence on the change in participation rates is shifts in economic conditions. In general, during a slowdown in the economy, more people become eligible for the FSP, and more eligibles choose to participate in the program. Similarly, during a recovery in the economy, fewer people become eligible for the program and fewer choose to participate. Shifts in economic conditions often affect the participation rate because the change in the number of participants either is smaller than the change in the number of eligibles or occurs at a different time. The economic shifts that had a major effect on participation rates between 1976 and 1990 are discussed in this section.

1. Rising Inflation and Strengthening Economy Between 1976 and 1978

Between 1976 and 1978, the economy was strengthening and rates of inflation were rising. The number of persons unemployed declined by 7 percent, and the Consumer Price Index (CPI) for all items went up by 15 percent between 1976 and 1978. Both of these factors probably caused the number of eligibles to decline, resulting in a rise in participation rates.

The high rate of inflation reduced the number of eligibles because it had the effect of making the asset and net income guidelines more restrictive. Specifically, the asset limit remained constant in nominal terms between 1976 and 1978. However, in real terms the asset limit became more restrictive during this period because inflation increased the value of countable assets relative to the asset limit. As a result, the number of eligibles passing the asset test declined. In fact, about 5.1 million of the 10.3 million decline in the number of eligibles was due to a decline in the number of eligibles passing the asset test.

Similarly, although the net income guideline increased between 1976 and 1978, it did not increase by as much as inflation, due to the lagged effect of the indexing procedure for the net income guideline. The net income guideline for each year between 1976 and 1978 was tied to the food price index for a previous time period (such as the previous year). The food price index increased by 3 percent between 1975 and 1976, by 6 percent between 1976 and 1977, and by 10 percent between 1977 and 1978. Since the indexing of the net income guideline is lagged, the guideline did not increase by as much as inflation in any given year. For example, the net income guideline increased by only 5 percent between September 1976 and February 1978, while the food price index increased by 11 percent during this period. Hence, the net income guideline became more restrictive in real terms, and the number of eligibles declined.'

'This assumes that incomes for low-income households rose at the rate of inflation between 1976 and 1978 (or by at least 5 percent). While this assumption is largely true, it may not be true for all low-income persons, particularly those on fixed incomes. For example, in some states, AFDC benefits may not have been indexed, and thus the number of eligible persons receiving only AFDC income in some states would have increased rather than decreased between 1976 and 1978.

The high rate of inflation and improving economy between 1976 and 1978 decreased the number of eligibles by more than the number of participants, resulting in an increase in the participation rate. The decline in the number of eligibles was greater than the decline in the number of participants because those losing eligibility were largely higher income persons on the margin of financial eligibility, who are less likely to participate.

While rates of inflation were even higher in other periods of the analysis, such as between 1978 and 1980, the high rates of inflation combined with the strengthening economy between 1976 and 1978 were the dominant influences on participation rates.

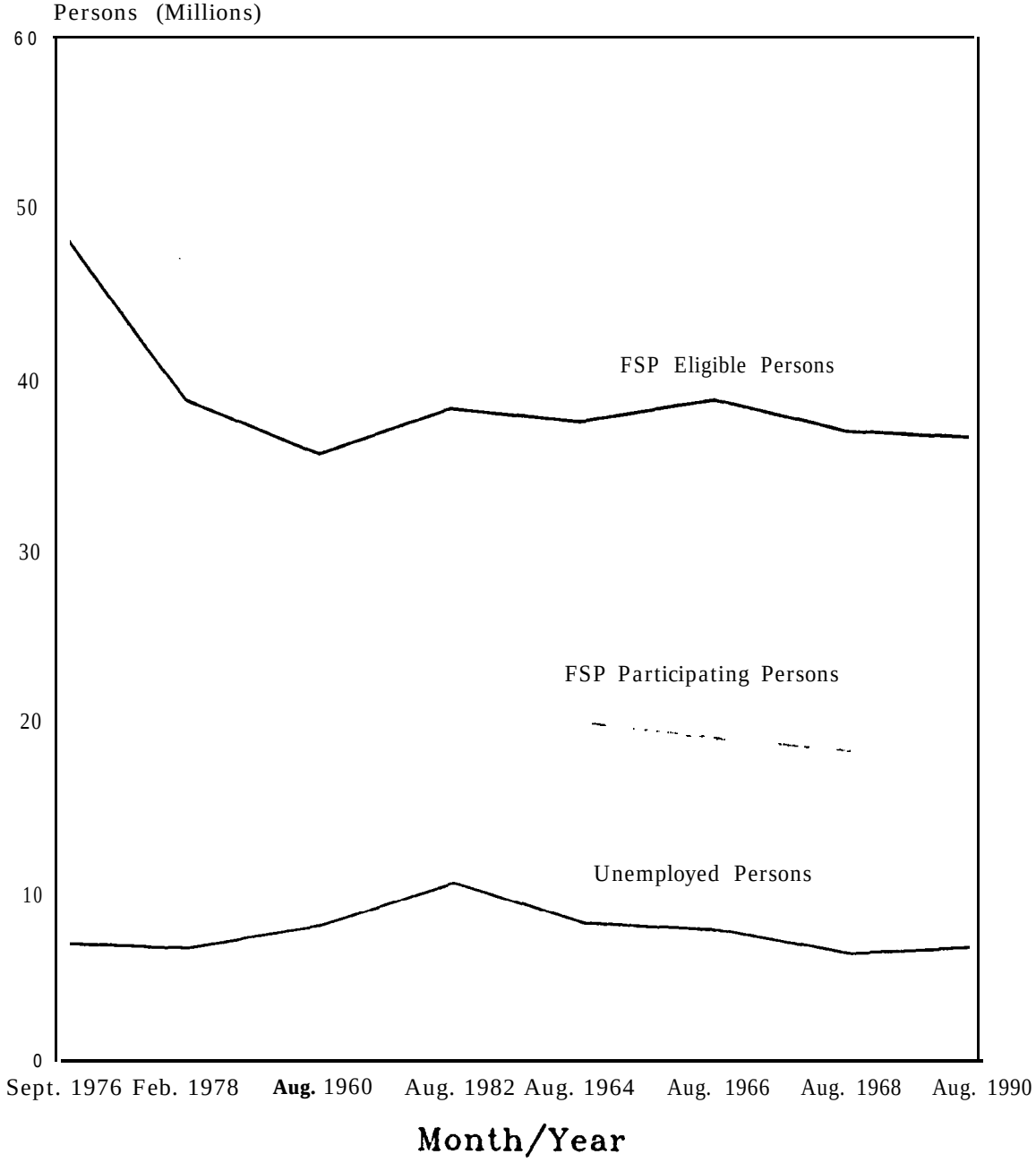
2. **Weakening Economy between 1978 and 1980**

Between 1978 and 1980, the economy was weakening, prices were rising, and energy costs were increasing. The Consumer Price Index (CPI) for all items went up 24.5 percent between 1978 and mid-1980. The weakening economy increased the number of eligibles while the rising inflation probably decreased the number of eligibles. Hence, the net effect of the changes in the economy between 1978 and 1980 was probably very small. The 1977 legislation was the dominant influence, causing participation rates to rise.

3. Recession between 1980 and 1982

Between 1980 and 1982, the economy was in recession. The number of unemployed persons rose substantially (by 19 percent), as illustrated in Figure V.l. Between 1980 and 1982, the number of eligibles increased by 7 percent, while the number of participants increased only by 2 percent, generating a decline in overall participation rates of 4 percentage points. The number of eligibles increased by more than the number of participants during the recession for two likely reasons: (1) the newly eligible might have been less likely to apply for food stamps because they could draw on other resources (such as assets or a second earner) for a short period of time, and (2) the newly

FIGURE V. 1
NUMBER OF ELIGIBLES, PARTICIPANTS
AND UNEMPLOYED PERSONS



eligible might have delayed applying for food stamps because they believed that their economic hardship would be short term.

The participation rate probably would have declined more between 1980 and 1982 had the restrictive 1981 OBRA legislation not been passed. The OBRA legislation reduced the number of eligibles, thus dampening the increase in eligibles due to the recession.

4. Recovery between 1984 and 1986

The economy was recovering between 1984 and 1986, exerting some downward pressure on the number of eligibles and participants. However, as discussed earlier, the more generous eligibility criteria implemented under the 1985 Food Security Act substantially increased the number of eligibles. Hence, the expansion in the number of eligibles under the 1985 FSA, combined with a slight decline in the number of participants under the growing economy, led to an overall decline in participation rates between 1984 and 1986.

5. Weakening **Economy In 1990**

While the economy was still strong at the national level in 1988 and 1989, it began to weaken in 1990. The number of unemployed persons increased from 6.5 million in 1989 to 6.9 million in 1990, after a steady decline since 1982. Furthermore, according to McConnell (1991), in such areas of the country as New England and the Middle Atlantic and East North Central, states began to suffer a recession earlier than the country as a whole between 1988 and 1989. Hence, the recession is partially responsible for the 12 percent increase in FSP participation between 1988 and 1990. However, as shown in Table lV.l, the number of eligibles remained relatively constant over the period, increasing participation rates by 6 percentage points.

The likely decline in the number of eligibles during the strengthening economy of 1988 and 1989, combined with the rise in the number of eligibles during the weakening economy of 1990, probably stabilized the total number of eligibles. However, the substantial rise in the number of participants

during the 1988 to 1990 period without an increase in the number of eligibles indicates that (1) as the economy began to weaken--as early as 1989 in some regions of the country--the number of participants increased among the already existing FSP eligibles, and that (2) other factors added to the rise in the number of participants without affecting the number of eligibles. In particular, the expansion in Medicaid and the changes made under the Homeless Assistance Act increased the number of participants without substantially affecting the number of eligibles.

C. CHANGES IN OTHER PROGRAMS CLOSELY ASSOCIATED WITH THE FSP

In addition to changes in FSP legislation and shifts in the economy, changes in other programs that are closely associated with the FSP may affect program participation rates. The effects of these programs are discussed in this section.

1. Expansions in Medicaid

The expansion in the Medicaid program between 1988 and 1990 increased the number of FSP-eligible women and children who participated in the FSP (see McConnell, 1991). The Medicaid expansion helps explain the substantial rise in the number of participants between 1988 and 1990 without a concomitant rise in the number eligibles, thus increasing participation rates. Specifically, the Medicare Catastrophic Act required that, by July 1988, states increase the Medicaid income eligibility limit for all pregnant women to at least 75 percent of the poverty level, and that by April 1990 they increase it for all pregnant women and children under age 6 to at least 133 percent of the poverty level. The legislative changes also encouraged states to increase their outreach programs and streamline their application processes. The Health Care Financing Administration (HCFA) reported that the number of Medicaid recipients rose dramatically, by about 2.5 million (11 percent), between FY 1989 and FY 1990.

The changes in the Medicaid program did not increase the number of persons *eligible* for the FSP because no direct link exists between eligibility for the Medicaid and the FSP programs. However,

the changes increased the number of FSP-eligible women and children who *participated* in the FSP because (1) Medicaid eligibility workers may have informed applicants about the FSP program benefits and eligibility guidelines, and (2) for persons already applying for Medicaid, it might have been less burdensome to apply for food stamps at the same time. Furthermore, some states share a common application form, and the Medicaid and FSP offices are often located in the same building. McConnell (1991) estimated that the number of FSP participants who may have been directly affected by the changes in the Medicaid eligibility limits--women age 14 to 59 and children under age 7 who received Medicaid but not AFDC--increased by about 250,000 between the first two quarters of FY 1989 and the first two quarters of FY 1990. Hence, McConnell concludes that about 25 percent of the increase in FSP participation between FY 1989 and FY 1990 can be explained by the expansions in the Medicaid program.

2. **Indexing of Supplemental Security Income and Social Security Benefits**

Households receiving Supplemental Security Income (SSI) or Social Security benefits have kept up with or done better than inflation over the period of the analysis because both of those programs are indexed. On the other hand, households that depend primarily on AFDC or General Assistance have fallen substantially behind the pace of inflation, since most states do not index those programs. In addition, many households with wage income have not kept up with inflation. About 40 percent of all food stamp households receive AFDC or General Assistance, and about 20 percent have wage income. However, since the majority of Social Security recipients and a smaller but significant proportion of SSI recipients are elderly, the elderly groups of food stamp recipients both have fared better in a relative sense and are affected less by changes in the economy than other groups of food stamp recipients, such as those who receive AFDC or earnings. Hence, during the recession of 1980 and 1982, when the number of eligibles and participants was generally increasing, elderly eligibles and participants were not affected as much because their SSI and Social Security benefits are indexed.

3. AFDC Program

Although participation in the AFDC program is highly *correlated* with participation in the FSP, there is no evidence that changes in the AFDC program *cause* changes in participation in the FSP program. That is, some of the factors that affect FSP participation, such as changes in the economy or changes in the Medicaid program, also affect AFDC participation, but changes in the AFDC program per se have not caused any major changes in the number of participants in the FSP program.

D. SUMMARY

Table V.l summarizes the dominant influences on the changes in participation rates from 1976 to 1990. In summary, the dominant influences causing the observed trends are:

1. The *rise* in participation rates between 1976 and 1978 was largely due to *rising inflation* combined with *a strengthening economy*. Rising inflation had the effect of making the asset and net income guidelines more restrictive, thus reducing the number of eligibles. The strengthening economy also reduced the number of eligibles. The number of eligibles declined more than the number of participants, leading to a 7 percentage point increase in participation rates.

2. The substantial rise in participation rates between 1978 and 1980 was principally caused by legislative changes to the FSP under the *Food Stamp Act of 1977.* Under the 1977 legislation, the number of participants increased due to the elimination of the purchase requirement, and the number of eligibles declined due to restrictive changes in the program, leading to a more than 16 percentage point increase in participation rates.

3. *The minor drop* in participation rates between 1980 and 1982 was largely due to the *recession. The* number of eligibles increased more than the number of participants, leading to a 3 percentage point decline in participation rates.

4. *The minor drop* in participation rates between 1984 and 1986 was due to the more generous eligibility requirements introduced under the 1985 *Food Security Act. The* changes in eligibility criteria under the 1985 Act immediately increased the number of eligibles, but the newly eligible population did not respond by entering the program, leading to a 4 percentage point decline in participation rates.

5. The tie in participation rates between 1988 and 1990 was due to an increase in the number of FSP participants with little change in the number of eligibles. The expansion in the Medicaid program was the major factor causing an increase in the number of participants. The Medicaid expansions were associated with little or no change in the number of eligibles because they increased participation among already existing FSP eligibles. Increased outreach and expedited service, and immigration legislation granting resident status to certain aliens may also have increased the number

of participants. The substantial increase in the number of participants, combined with almost no change in the number of eligibles, lead to a 6 percentage point increase in participation rates.

REFERENCES

Allin, Susan, and Harold Beebout. "Determinants of Participation in the Food Stamp Program: A Review of the Literature." *Current Perspectives on Food Stamp Program Partkipation.* Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1989.

Brown, G. *"Food Stamp Program Participation and Non-Food Expenditures."* Washington, DC: Division of Consumer Expenditure Surveys, Bureau of Labor Statistics, U.S. Department of Labor, 1988b.

Czajka, J.L., "Determinants of Participation in the Food Stamp Program: Spring 1979." Report to Food and Nutrition Service, U.S. Department of Agriculture. Washington, DC: Mathematica Policy Research, Inc., 1981.

Doyle, Pat. *"An Analysis of Intra-Year Income Receipt".* Report prepared for the Food and Nutrition Service, U.S. Department of Agriculture. Washington, DC: Mathematica Policy Research, Inc. 1984.

Doyle, Pat, "Food Stamp Program Participation Rates: August 1985." *Current Perspectives on Food Stamp Program Participation.* Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1990.

Doyle, Pat and Harold Beebout. "Food Stamp Program Participation Rates." *Current Perspectives on Food Stamp Program Participation.* Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1988.

Doyle, Pat, Ann Huff, Kirsten Coffin, and Carole Trippe. "The MATH Technical Description: Current Services Files." Report to the Food and Nutrition Service, U.S. Department of Agriculture. Washington, DC: Mathematica Policy Research, Inc., 1990.

Martini, Alberto. "Participation in the Food Stamp Program: A Multivariate Analysis." *Current Perspectives on Food Stamp Program Participation.* Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1992.

McConnell, Sheena. "The Increase in Food Stamp Program Participation Between 1989 and 1990: A Report To Congress." Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1991.

Ponza, Michael, and Linda Wray. Quick Response Study II. Evaluation of the Food Assistance Needs of the Low-Income Elderly and Their Participation in USDA Program (Elderly Programs Study. Report prepared for the Food and Nutrition Service, U.S. Department of Agriculture. Washington, DC: Mathematica Policy Research, 1990.

Ross, C. "The Food Stamp Program: Eligibility and Participation." Washington, DC: Congressional Budget Office, 1988.

Ruggles, Patricia and Richard C. Michel. "Participation Rates in the Aid to Families with Dependent Children Program: Trends for 1967 Through 1984." Washington, DC: The Urban Institute, 1987.

Shiels, John F., Burt S. Bamow, Katherine A. Chanrette, and Jill M. Constantine. "Elderly Persons Eligible For and Participating In the Supplemental Security Income (SSI) Program." Vienna, VA: Lewin/ICF, 1990.

Trippe, Carole. "Estimating Rates of Participation in the Food Stamp Program: A Review of the Literature." *Current Perspectives on Food Stamp Program Participation.* Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1989.

Trippe, C., and H. Beebout. "Food Stamp Program Participation Rates Among the Poverty Population, 1980-1987." *Current Perspectives on Food Stamp Program Participation.* Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1988.

Trippe, Carole, and Pat Doyle. "Food Stamp Program Participation Rates: January 1988." *Current Perspectives on Food Stamp Program Participation.* Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1992.

U.S. Department of Agriculture, Food and Nutrition Service. "Effects of the 1977 Food Stamp Act". Second Annual Report to the Congress, Jan. 1981. Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1981.

U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis and Evaluation "Characteristics of Food Stamp Households: Winter 1988." Alexandria, VA: Food and Nutrition Service, U.S. Department of Agriculture, 1990.

U.S. Department of Commerce, Bureau of the Census. "Characteristics of the population below the poverty level: 1978." *Current Population Reports, series* p.60, no. 124. Washington, DC: U.S. Government Printing Office, 1980.

U.S. Department of Commerce, Bureau of the Census. "Characteristics of Households receiving noncash benefits: 1980." *Current Population Reports*, series p.60, no. 128. Washington, DC: U.S. Government Printing Office, 1981.

U.S. Department of Commerce, Bureau of the Census. "Characteristics of the population below the poverty level: 1981." *Current Population Reports, series* p.60, no. 138. Washington, DC: U.S. Government Printing Office, 1983.

U.S. Department of Commerce, Bureau of the Census. "Money Income and Poverty Status in the United States: 1989." *Current Population Reports, series p-60,* no. 168. Washington, DC: U.S. Government Printing Office, 1990.

APPENDIX A

TECHNICAL PROCEDURES USED TO COMPUTE ELIGIBLE PERSONS, HOUSEHOLDS, AND BENEFITS

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As noted in the text, simulations of eligible persons, households, and benefits were based on data from the March Current Population Survey. Eight different CPS files were processed, one for each year of the analysis. The CPS is not perfectly suited to simulate eligibility under the Food Stamp Program for three reasons: (1) it lacks a monthly accounting period, (2) it reflects considerable underreporting of income, particularly among cash welfare programs, and (3) it omits information on assets, deductible expenses, and food stamp units. Nonetheless, it is the only nationally representative survey that provides measures of income and demographic characteristics that were available continuously throughout the time frame of this study.

This Appendix provides detailed information on how we used the survey to determine program eligibility, and how we compensated for deficiencies in the data. Section A provides an overview of the CPS and changes made to the survey during the time frame of this study. Section B describes how we initially processed each file, including how we generated an extract file and estimated monthly income. Section C discusses how we imputed program unit, gross income, and assets to households on the initial extracts. Section D discusses how we computed net income for those households. The Appendix concludes with an outline of the simulation model which relies on the constructed variables described in sections B through D, as well as an assessment of the outcome of that model.

A. THE MARCH CURRENT POPULATION SURVEY

The March Current Population Survey (CPS) is a nationally representative survey of households in the United States repeated annually. Each survey measures demographic and labor-force information for March, the month in which the interviews are conducted, and annual retrospective

income and employment information for the preceding calendar year. The demographic data include age, race, sex, marital status, educational attainment, family structure, and place of residence. The economic data include current and retrospective labor-force participation and annual income from wages and salaries, self-employment, cash transfers, assets, and other sources.

The surveys underlying this study were conducted every other year beginning in 1977 and running through 1991. During that time the questionnaire content remained relatively stable, with one principal exception: the questions on types and amounts of income received were significantly improved between the March 1978 and March 1980 CPS.[1] In addition, the Census Bureau periodically made changes in data processing prior to releasing the public-use file. These changes, outlined in Table A.1, had an impact on the poverty rates and, we presume, on the estimates of food stamp eligibles. However, the changes in the poverty rates are not large relative to the observed changes in the eligible pool, as illustrated below:

- The questionnaire changes that occurred between the March 1979 and March 1981 CPS files generated a .9 percent decline in the overall individual poverty rates for 1978 (Current *Population reports, P-60,* no. 124).
- The processing changes that occurred between the March 1981 and March 1983 CPS files generated a 1.5 percent increase in the poverty rate (*Current Population reports,* P-60, no. 138).
- The processing changes that occurred between the March 1983 and March 1985 CPS files generated a .7 percent increase in the individual poverty rate in 1990 (U.S. Department of Commerce, 1986).
- The processing changes that occurred between the March 1987 and March 1989 CPS files generated a .7 percent reduction in the poverty rate (U.S. Department of Commerce, 1990.)

'The new instrument represented an improvement in the collection of income data in three ways: it contained more probes to identify circumstances associated with income receipt, a more detailed enumeration of income sources, and more explicit records of jointly received income among husbands and wives.

TABLE A.1

CHANGES IN THE MARCH CPS OVER TIME

March Year	Data Year	Changes in Design or Weighting from Previous Year
78	77	None
79	78	Changes in metro-nonmetro definitions New, more detailed income questions were introduced for 2 rotation groups.
80	79	Definition of adult changed from age 14 to age 15. New concept of families and **headship** status New income questions were introduced for all rotation groups.
81	80	New weighting procedure based on 1980 Census was introduced which increased the overall population by 2.3 percent and had a disproportionate impact on Hispanics.
82	81	Top coding of income variables was increased from $50,000 to $75,000.
83	82	New industry and occupation coding New definition of group quarters The poverty index was modified slightly (deleting the farm/nonfat-m dimension).
84	83	The March 1984 file was issued twice. In the second (unofficial) version, the Bureau introduced the revised weighting procedure developed for the March 1985 CPS.
85	84	Revised weighting procedures -- specifically, the control on Hispanics was changed. This caused a slight increase in poverty with disproportionate impacts on the Hispanic population, male unrelated individuals, and persons in related subfamilies. Changes in the designation of metro/nonmetro, **farm/nonfarm,** central city/noncentral city statuses
86	85	More metro/nonmetro changes
87	86	None
88	87	None
89	88	Revised processing procedures increased income overall and reduced poverty. The poverty rate changed more severely for blacks and persons in selected age ranges.
90	89	None
91	90	None

B. INITIAL PROCESSING

Because the Food Stamp Program serves the low-income population, we initially reduced the size of each CPS file by excluding households whose income exceeded 250 percent of poverty who did not report receiving food stamps or cash welfare (AFDC, SSI, or GA) at least once during the previous calendar year. This procedure reduced processing costs but, more importantly, reduced the bias introduced with our using administrative data to assign net income (discussed in Section D).

Once the size of the file was reduced, we estimated a monthly income stream from the reported annual amounts. Income was grouped into four categories, which we treated differently:

- *Earnings. The* model first allocated periods of work within the year according to a random assignment of reported weeks worked to calendar months with one exception: periods of the work of husbands and wives were forced to overlap by at least one month based on the research of Doyle (1984). The model then allocated earnings evenly over months of work.

- ***Unemployment Compensation. The*** allocation model applied to this project assigned unemployment compensation randomly within periods of nonwork, as long as the individual worked less than the full year. The annual amount was then allocated evenly over that period.[2] For full year workers, the model evenly allocated the annual amount over the year.

- ***Noncash Transfers and Other Nonasset Income. The*** model for this project applied a different method for allocating unearned income depending on a person's age and type of income. Elderly recipients had the amount allocated evenly over the full year. For nonelderly recipients, the model used a three-step procedure. First, the model randomly determined the number of months in which this income source was received, based on probabilities that varied by types of income

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'Prior to the March 1989 CPS, amounts received for Unemployment Compensation were lumped together with amounts received for Veterans' benefits and Workers' Compensation, while receipt was identified separately. Hence, based on Doyle et. al., (1990), we allocated the lump-sum amount to component parts before allocating annual benefits to monthly amounts. The procedure was as follows. If the receipt of all three amounts was reported, we allocated 40 percent of the total to Veterans' benefits, 21 percent to Unemployment Compensation, and the balance to Workers' Compensation. If any two pair were reported received, we allocated the total amount as follows:

- Veterans (65 percent) and Unemployment Compensation (35 percent)
- Veterans (51 percent) and Workers' Compensation (49 percent)
- Unemployment Compensation (36 percent) and Workers' Compensation (64 percent)

developed in Doyle (1984). Second, the model assigned the period of receipt randomly within the year. Third, the model allocated the amount evenly over the assigned period of receipt.

- ***Other.*** We allocated cash welfare (AFDC, SSI, and GA) and asset income evenly over the full year, because sufficient information was not available to do otherwise.

C. DEVELOPING THE UNIT AND UNIT-LEVEL GROSS INCOME AND ASSETS

We enhanced the initial CPS extracts with measures of the food stamp unit, the gross income of the unit, and the asset holdings of the unit, all of which were required to simulate food stamp net income and eligibility.

1. The Food Stamp Unit

The food stamp household differs from the Census household concept in that the program unit is based on shared food purchase and preparation in addition to shared living quarters, while the Census household definition is based only on shared living quarters. The unit of observation in the CPS is the Census household, and adults within that unit are interviewed to collect CPS data. We would have liked to model the food stamp unit but were unable to do so, because the CPS lacks information on shared food purchase and preparation. However, we captured one aspect of the unit definition: SSI recipients who receive cash in lieu of food stamps in SSI cashout states were excluded from the unit. The cashout states were California and Wisconsin in all years and Massachusetts in 1976 and 1978.

2. Gross Income

Once the unit was constructed, we developed estimates of the unit's gross income by summing monthly income over members of the unit. The monthly income allocation routine assigned income to 12 months of each year processed. However, we selected only one month for analysis corresponding to the reference period of the administrative data discussed in Chapter III. Gross income reflected the sum of person-level income assigned to that month.

3. Asset Balances

The assets of the food stamp unit were imputed on the basis of annual income from interest-bearing accounts, rental property, and other assets. The balance that was assigned equaled the income amount divided by 6.5 percent. This procedure, used by the MATH model until very recently, has some obvious problems: (1) it omits countable assets other than financial assets, the most important of which are vehicles, and (2) it yields a very uneven distribution of asset balances because asset income on the CPS tends to be reported in $50 intervals.[3] Doyle (1990) used SIPP data to estimate the impact of using this approximation of asset balances in lieu of full details on countable financial assets to simulate food stamp eligibility. Doyle found that using the proxy for financial assets (together with reported vehicular assets) in lieu of actual financial assets (plus vehicular assets) generated a 4 percent increase in eligible households and a 3 percent increase in eligible individuals in August 1985. Unpublished statistics from the same data source show that using just a proxy for financial assets (i.e., to cover both financial and vehicular assets) would increase eligible households by 10 percent (and eligible individuals by 12 percent) relative to using a proxy for financial assets plus actual vehicular assets.[4]

D. ESTIMATING NET INCOME

Because food stamp net income cannot be constructed from the information available on the CPS, we used a four-stage imputation procedure to assign food stamp net income to households in the analysis files. We first estimated a single ordinary least squares (OLS) regression equation for each of the even-numbered years between 1976 and 1990 inclusive, in order to obtain parameter estimates that represented the relationship between a set of food stamp unit characteristics and food

[3] A Memorandum from Tom Fraker to Steven Carlson dated January 24, 1984 discusses the uneven distribution of imputed asset balances.

[4] A memorandum from Pat Doyle to Marian Lewin dated August 14, 1989 finds that the estimates quoted here are equivalent to the impact of eliminating the vehicular component of the asset test.

stamp net income. We used case record survey data to estimate these equations. In the second stage, we applied these year-specific sets of parameter estimates to the CPS extracts from corresponding years to predict food stamp net income for sample households.[5] We then added a stochastic error term to the predicted values, in order to produce imputed values of net income with the observed amount of variation across the sample observations.[6] In the final stage, we set bounds on these imputed values so that no records would receive imputed values that either exceeded gross income minus the food stamp standard deduction or fell below zero dollars.'

This section describes how we developed the imputation equations, focusing on the data used for estimation, alternative methods of estimation, and the results.

1. Data

We used case record survey data (discussed in Chapter III) for each even-numbered year between 1976 and 1990 inclusive, to estimate the eight corresponding-year imputation equations. Our analysis files excluded households with zero gross income, since, by definition all such households have zero net income. We also excluded Earned Income Tax Credit (EITC) income from the earned income variable derived with the administrative data, since it is omitted in the CPS. Finally, we excluded Puerto Rico from the 1976 and 1978 data in order to be consistent with data in the other years.

We have one primary concern about using administrative data to impute net income to the CPS. Specifically, the imputation equations estimated with these data reflect relationships for a sample of food stamp participants; however, we applied them to a sample of low-income households that

[5] As discussed below, the equations were not applicable to households with zero gross income. We assigned zero net income to these cases.

[6] For each CPS household record, MPR generated a stochastic error term from a normal distribution with a mean equal to zero and a standard deviation equal to the standard error of the regression.

'Prior to 1980, the upper bound on imputed net income was gross income, since a standard deduction did not exist.

may differ in important ways. In particular, because some CPS households have higher incomes than the food stamp participating households found in the administrative data, the estimated relationship between the explanatory variables and net income may not hold for these CPS households. Consequently, the predicted value of net income for these households may be systematically biased.

2. Alternative Methodologies

As noted earlier, we developed a single OLS regression equation in each year to predict food stamp net income. We considered using two alternative methodologies for imputing food stamp net income. The first would have imputed food stamp net income on the basis of information available on the average ratio of net income to gross income for households in different gross income categories (e.g., $0 to $100 per month, $101 to $200 per month, etc.) to determine net income.[8] However, we had reservations, because there are other important predictors of food stamp net income that, if used in the procedure would have made the imputed values more accurate.

The second methodology, which is considerably more complicated, would have used the parameter estimates generated by a tobit model to impute food stamp net income. Analytically, the tobit model approach would have been preferred over the OLS approach, since the tobit model would have allowed us to incorporate information on households with zero gross income. We would not have felt comfortable in doing so with the OLS approach, since OLS parameter estimates are biased when a large number of zero values on the dependent variable exist. However, we were unable to use the tobit-based procedure because it is substantially more resource-intensive than the OLS approach.

3. The Results

We used a single model specification for the seven OLS regression equations to ensure that net income would be imputed *consistently* over time, including an identical set of independent variables

[8]This information was generated from administrative data.

and an identical functional form in all seven estimated equations.[9] We developed this model specification from two sets of preliminary specifications--one generated with 1984 data, and the other with 1988 data.

The final model is shown as equation (A.l):

$$(A.1)\quad NET_i = \alpha + \Sigma B_j X_{ij} + V_i,$$

where, for the "ith" household, NET is food stamp net income, X is a vector of independent variables, and V is the error term. These independent variables include earned income, the square of earned income, unearned income, the square of unearned income, a flag indicating households whose gross income is less than or equal to $100, a flag indicating households that resided in Alaska at the time of the interview, a flag indicating households that resided in Hawaii at the time of the interview, a flag indicating households that resided in the Midwest at the time of the interview, a flag indicating households that resided in the South at the time of the interview, and a flag indicating households that resided in the West at the time of the interview.

Table A.2 presents the regression results for each of the OLS equations. In all equations, all of the income variables are statistically significant at the .05 level, except the square of unearned income in the 1978, 1982 and 1988 models.[10] The coefficients on earned income and unearned income are always positive, and the coefficients on their square terms are typically also positive, suggesting that net income increases with both earned and unearned income at an increasing rate. In all equations, the coefficient on the flag that indicated households whose gross income is less than

[9]The 1976 administrative data did not sample Alaska residents; consequently, a flag which indicates households that resided in Alaska was not included in the 1976 regression. This is the only difference in specification between the 1976 equation and the other six equations.

[10]The SAS-generated standard error estimates and t-statistics assume that the data were drawn from a simple random sample. Because the data were drawn from a stratified random sample, the standard error estimates and t-statistics presented are only approximations; however, we do not believe that this will usually affect our ability to infer statistical significance.

TABLE A.2

RESULTS FOR THE FOOD STAMP NET INCOME REGRESSION EQUATIONS
(Standard Error Estimates in Parentheses)

Explanatory Variable	Coefficients Estimated Using Administrative Data For: 1976	1978	1980	1982	1984	1986	1988	1990
Constant	-60.0383* (2.9524)	-62.9407* (3.2940)	-125.9960* (3.5619)	-185.4315* (4.4493)	-169.8675. (3.4631)	-186.3751' (3.0435)	-204.8244' (2.9655)	-196.4351 . (4.0839)
Earnings	0.7809* (0.0101)	0.7422' (0.0108)	0.7715* (0.0127)	0.8254' (0.0131)	0.80625 (0.0097)	0.7900* (0.0962)	0.7353' (0.0084)	0.7049* (0.0092)
Earnings Squared	-0.000102* (0.000013)	-0.000012 (0.000012)	0.000067* (0.000015)	0.000037' (0.000013)	0.000044* (0.000009)	0.000020* (0.000004)	0.000076* (0.000008)	0.000076' (0.000007)
Unearned Income	0.9064* (0.0157)	0.9253* (0.0171)	0.9562* (0.0187)	1.0348* (0.0184)	0.9634* (0.0124)	0.9440* (0.0097)	1.0086* (0.0054)	0.8863* (0.01319)
Unearned Income Squared	0.0000663* (0.000023)	0.090025 (0.090924)	0.000109* (0.000025)	-0.000026 (0.000022)	0.009073' (0.000013)	0.000087* (0.000009)	0.000002 (0.000002)	0.00012* (0.000012)
Flag for Households with Gross Income ≤ $100	10.6218' (36488)	18.0543* (4.4236)	59.9508* (4.7778)	90.8267* (6.2122)	92.4235' (54448)	112.8131* (4.7698)	126.1543* (5.6708)	117.15645 (6.5974)
Flag for Households Residing in Alaska	NA	-60.8075* (9.7622)	-20.6258* (6.8873)	-38.4529* (17.3631)	-42.1620* (14.9779)	-50.9189' (12.6897)	-52.6491 . (11.8503)	-35.412s (11.9143)
Flag for Households Residing in Hawaii	23.9860' (8.5449)	5.5784 (6.5567)	-1.4705 (3.6057)	-38.3475 . (7.4509)	-33.7594' (5.7024)	-26.5311* (6.7390)	-39.9692* (7.6994)	12.7144 (7.9143)
Flag for Households Residing in the Midwest	24.4276* (1.8605)	13.5778* (2.1125)	4.3647* (2.1379)	26.6802* (2.9609)	15.9736* (2.3582)	16.3730* (2.1788)	16.1722* (2.4354)	22.1803* (2.6508)
Flag for Households Residing in the South	36.3114* (1.7108)	33.0194' (1.9284)	-0.32% (2.0657)	42.4122* (2.6281)	19.6970. (2.2891)	25.9688* (2.1389)	32.5873' (2.3697)	36.7736* (2.6055)
Flag for Households Residing in the West	13.9124' (2.0378)	10.5384* (2.4481)	-1.6665 (2.7431)	25.5066' (3.0763)	18.2787' (2.6038)	16.1168' (2.2460)	17.9284* (2.5100)	23.4548' (2.7491)
Sample Size	10,690	13,580	3,743	6,345	6,348	10,349	9,942	9,842
R^2	0.8080	0.7380	0.9240	0.8634	0.91%	0.9042	0.8930	0.8803
Adjusted R^2	0.8078	0.7378	0.9238	0.8632	0.9195	0.9041	0.8929	0.8801

*Indicates significance at the .05 level using a two-tail t-test. Coefficients identified as significant at the .05 level are those with t-values greater than 1.96.

negative value of the constant term is misleading, since it seems to suggest that the lowest-income households have negative net income. However, since the coefficient on the variable that indicated households whose gross income is less than or equal to $100 is positive (all else equal), these equations will predict positive values of net income for the lowest-income households,

In virtually all of the models the coefficients on the three region variables (the Midwest, the South, and the West) are significant and positive, while the coefficients on the Alaska and Hawaii flags are significant and negative. These results suggest that, when we controlled for gross income and the other variables in these equations, residents of the Midwest, the South, and the West tended to have higher values of net income relative to the Northeast (the excluded category in the regressions). The signs of the coefficients on the Alaska and Hawaii variables vary considerably more. Because we are regressing one component of gross income--net income--on earned income and unearned income (which sum to gross income), the equations have a wealth of predictive power. The adjusted R-squared of these equations varies from a low of .7325 for the 1978 equation to a high of .9238 for the 1980 equation.

We experimented with alternative specifications using the 1984 and 1988 data to determine the final specification for all the equations. We included different combinations of additional independent variables, primarily variables thought to serve as proxies for food stamp deductions. These variables include different representations of household size, the presence or number of elderly household members, and the presence or number of children younger than age 5. The household- size variables were not included in the final model because--regardless of the functional form used--their coefficients were tremendously unstable across different years. The other variables, which were included to serve as proxies for deductions and thus expected to have *negative* coefficients, consistently had *positive* coefficients. Because we could not determine why these coefficients should be positive, we excluded the variables from the model. In addition, we

experimented with a log-linear specification, but discovered that predicted values generated with the linear model fit the data better than those generated with the log-linear model.

E. SIMULATING PROGRAM ELIGIBILITY

We developed a model of food stamp eligibility criteria based on estimated asset balances and gross and net monthly income, and applied the model to each analysis file developed for this project. We parameterized the model to capture changes in the program eligibility criteria over time. The parameters and the assigned values are listed in Table A.3. The general procedure was as follows:

- Unless exempt, units were subject to an asset test whereby assets were compared with the limits in Table A.3. Units whose assets exceeded the appropriate limit were ineligible. In selected years, certain cash assistance households were not subject to the asset test because they were deemed to be automatically eligible for food stamps.

- Unless exempt, units were subject to a gross income test for all years except 1976, 1978, and 1980. If gross income exceeded the appropriate limit, the household was not eligible for food stamps. In selected years, certain cash assistance households were not subject to the gross income test because they were deemed to be automatically eligible for food stamps. Households that contained an elderly or disabled individual were exempt from the gross income test in all years.

- Unless exempt, units were subject to a net income test whereby net income was compared with the appropriate limits in Table A.3. Units whose income exceeded the appropriate limit were ineligible. In selected years, certain cash assistance households were not subject to the net income test because they were deemed to be automatically eligible for food stamps.

- Units who were not deemed to be ineligible under one or more of the previous tests were assigned benefits computed as a function of net income. In 1976 and 1978, benefits were the difference between the coupon allotment, which varied according to household size, and the purchase requirement, which varied according to income and household size. In subsequent years, benefits were equal to the maximum coupon allotment less 30 percent of net income. Table A.3 describes the maximum coupon allotments, and the Federal Register (July 2, 1976 and November 8, 1977) documents the purchase requirements.

- Units with positive benefits were deemed to be eligible for food stamps.

The results of the simulations compare favorably with other estimates of the eligible population in the literature. Table A.4 compares the 1984 simulation with corresponding simulations developed

TABLE A.3

FOOD STAMP ELIGIBILITY PARAMETERS, 1976 TO 1990

Analysis Year	*September 1976* Food Stamp Act of 1964 As Amended	*February 1978* Food Stamp Act of 1964 As Amended	*August 1980* Food Stamp Act of 1977; As Amended in 1979 and 1980. Effective late 1978, early 1979	*August 1982* OBRA 1981 As Amended in 1981; Effective 10/81	*August 1984* OBRA As Amended in 1982; Effective 10/82	*August 1986* Food Security act of 1985; Effective 5/86	*August 1988* 1987 Homeless Assistance Act;	*August 1990* Hunger Prevention Act of 1988
Gross Income Eligibility	No test	No test	No test	<= 1.3 * Poverty Line	<= 1.3 * Poverty Line	<= 1.3 * Poverty Line	<= 1.3 * Poverty Line	<= 1.3 * Poverty Line
Net Income Eligibility	<= Maximum Food Stamp Income	<= Maximum Food Stamp Income	<= Poverty Line	<= Poverty Line	<= Poverty Line	<= Poverty Line	<= Poverty Line	<= Poverty Line
Asset Eligibility	$1500; $3000 for aged households of at least 2 persons					$2000; $3000 for aged households		
Benefit Reduction Rate	N/A	N/A	.3	.3	.3	.3	.3	.3
Minimum Benefit	Varies by household size	Varies by household size	Persons Min 1 $10. 2 $10. 3+ $ 0.	Persons Min 1 $10. 2 $10. 3+ $ 0.	Persons Min 1 $10. 2 $10. 3+ $ 0.	Persons Min 1 $10. 2 $10. 3+ $ 0.	Persons Min 1 $10. 2 $10. 3+ $ 0.	Persons Min 1 $10. 2 $10. 3+ $ 0.
Eligibility of Pure PA Households (AFDC or SSI)	No Automatic Eligibility	Automatically Eligible	No Automatic Eligibility	No Automatic Eligibility	No Automatic Eligibility	Automatically Eligible	Automatically Eligible	Automatically Eligible
Purchase Requirement	Yes	Yes	No	No	No	No	No	No
Benefit Calculation	Benefit = Maximum benefit (household size) - Purchase Requirement (household size and net income)		Benefit = Maximum benefit (household size) - .3 x Food Stamp Net Income					
SSI Cashout States	California, Wisconsin, Massachusetts					California, Wisconsin		

Monthly Food Stamp Net Income Screen — Unit Size	US	AK	HI	US	AK	HI	US	AK	HI	US	AK	HI	US	AK	HI	US	AK	HI	US	AK	HI	US	AK	HI
1	245	307	273	262	328	286	316	397	365	390	490	436	415	520	478	447	559	515	459	572	526	499	624	573
2	322	413	407	344	447	427	418	524	481	519	650	597	560	701	645	604	755	695	617	770	709	699	836	769
3	433	593	500	460	633	607	621	650	598	647	810	745	705	882	811	760	950	875	775	969	891	839	1049	965
4	553	753	740	588	807	773	723	777	715	775	970	892	850	1063	978	917	1146	1055	934	1167	1074	1009	1261	1160
5	660	893	880	687	960	920		904	831	904	1130	1040	995	1244	1145	1074	1342	1235	1092	1365	1256	1179	1474	1356
6	787	1073	1053	827	1147	1100	825	1030	948	1032	1290	1187	1140	1425	1311	1230	1538	1415	1250	1564	1439	1349	1686	1552
7	873	1187	1167	913	1273	1220	926	1157	1065	1180	1450	1335	1285	1605	1478	1387	1732	1595	1409	1762	1621	1519	1899	1748
8	993	1353	1333	1047	1453	1393	1028	1264	1161	1289	1610	1462	1430	1786	1645	1544	1930	1775	1567	1960	1804	1689	2111	1944
+	127	167	166	133	180	173	162	127	117	129	160	142	145	181	167	157	1%	180	158	198	183	170	213	196

Monthly Maximum Food Stamp Allotment — Unit Size	US	AK	HI	US	AK	HI	US	AK	HI	US	AK	HI	us	AK	HI	US	AK	HI	US	AK	HI	US	AK	HI
1	50	68	66	52	72	70	43	98	84	76	197	95	76	109	166	80	111	124	87	113	133	99	123	151
2	92	124	122	96	134	128	115	166	158	128	293	175	139	200	198	147	204	228	159	207	244	182	227	276
3	130	178	174	138	190	182	165	258	226	163		250	199	286	283	211	293	327	228	297	350	260	325	396
4	166	226	222	174	242	232	209	327	287	233	359	318	301	432	360	268	372	415	290			331	413	503
5	198	268	264	206	288	276	248	388	341	277	426	378	361	518	427	318	442	493	344	538	441	393	490	598
6	236	322	316	248	344	330	298	466	409	332	512	453			513	382	530	592	413	595	633	472	588	717
7	262	356	350	274	382	366	329	515	452	367	565	501	396	473	567	422	586	654	457		706	521	650	793
8	298	406	400	314	436	418	376	589	517	419	646	572	457	655	446	483	670	748	522	466	800	596	743	906
+	38	50	50	40	54	52	47	74	65	53	81	72	37	62	81	60	84	94	65	85	100	75	93	113

NOTE: Eligibility parameters are for the 50 states and the District of Columbia. Puerto Rico is excluded from data for 1976 and 1978 in order to be consistent with other years, and Guam and the Virgin Islands are excluded for all years.

TABLE A.4

INDEPENDENT ESTIMATES OF THE ELIGIBLE POPULATION IN 1984 AND 1988

	CPS 1984	MATH 1984	SIPP 1984	CPS 1988	SIPP 1988
Eligible Individuals (thousands)	37,751	37,301	30,359	37,206	30,785
Eligible Households (thousands)	13,987	13,801	12,242	14,640	12,265
Benefits Payable to Eligible Households (millions)	1,350	1,320	1,060	1,598	1,332
Average Household Size	2.7	2.7	2.5	2.5	2.5
Average Benefits	$35.76	$35.39	$34.92	$42.95	$43.3

from SIPP (Doyle and Beebout, 1988) and from the MATH model database developed from the March 1985 CPS (Doyle and Trippe, 1989). It also compares the 1988 simulation with a corresponding simulation developed from SIPP (Trippe and Doyle, 1992).

For 1984, the two CPS-based estimates of the number of eligible households are nearly identical, and the two CPS-based estimates of the number of eligible persons and benefits vary by less than 3 percent. As expected, given the more accurate measurement of monthly income and composition, the SIPP-based estimates of eligible households, persons and benefits are lower than the two CPS-based estimates. Compared with the estimates used in this study, the SIPP-based estimates of the number of eligible households is about 13 percent lower, while the estimates of persons and benefits are approximately 20 percent lower.

For 1988, the SIPP-based estimate of the number of eligible households is about 16 percent lower than the CPS-based estimate developed for this study. The corresponding comparison for both persons and benefits is 17 percent lower.

It is interesting to note that the average household size among eligible households is 2.5 among both of the 1988 estimates and among the 1984 SIPP-based estimates. However, among both of the 1984 CPS-based estimates, the average household size is 2.7. The change in average household size in the CPS estimates when there is no change in the SIPP-based estimates is a curious finding. However, given that the two independent CPS estimates agree so closely, we do not believe that this discrepancy signals a problem in the results presented here or elsewhere.

APPENDIX B

SELECTED FEATURES OF THE FOOD STAMP PROGRAM UNDER PAST AND CURRENT LEGISLATION

TABLE B.l

SELECTED FEATURES OF THE FOOD STAMP PROGRAM UNDER PAST AND CURRENT LEGISLATION

	Food Stamp Act of 1964 as Amended (PL 88-525)	Food Stamp Act of 1977 (PL 95-113) Effective l-l-79	Food Stamp Amendments of 1979 and 1980 (PL 96-58 and PL %-249)	Omnibus Budget Reconciliation Act of 1981 (PL 86-35) and Food Stamp Amendments and Reauthorization Act of 1981 (PL 97-98) Effective 10-l-81
Allotment	Thrifty Food Plan. Indexed since 1971, indexed semiannually from 1973-1979 based on BLS food price index	Thrifty Food Plan. Indexed semiannually based on Thrifty Food Plan components	Thrifty Food Plan. Indexed annually in Jan. based on Sept. cost of Plan components	Thrifty Food Plan. Indexing frozen until 7-l-83, next adjustment 10-l-84 based on June cost of Plan components
Income Maximum	Net income ≤ maximum food stamp net income which was tied to the maximum coupon allotment	Net income ≤ poverty line	Excludes energy assis-tance as income. Includes income of in-eligible aliens less prorate share.	Gross income ≤ 1.3 poverty, except for elderly & disabled, who keep previous net income limit
Itemized Deductions	Payroll, 10% of earnings to $30, child care, education, medical over $10, alimony or child support, casualty losses, shelter in excess of 30% of net	20% of earnings, child care up to $75, shelter in excess of 50% of net not to exceed $75 in combination with child care. Limit indexed annually in July based on shelter-fuel-utilities component of the CPI	1980 Act: shelter/ child care cap indexed annually in Jan. based on Sept./Sept. change; 1979 Act: medical expenses over $35 for elderly & dis-abled allowed, elderly and disabled not sub-ject to the shelter deduction maximum	18% of earnings, shelter/child care cap set at $115 with next inflation adjustment on 7-l-83, with following adjustment 10-l-84, each Oct. thereafter
Standard Deduction	None	$60. Indexed semi-annually to CPI-nonfood components change	Indexed annually in January based on Sept. to Sept.	$85 with next infla-tion adjustment 7-l-83, next adjustment 10-l-84; indexed using CPI-nonfood, non-home-ownership, non-maintenance of shelter costs.
Benefit Reduction Rate	Basis of issuance tables (average 30% above lowest levels)	30%	No change	No change

TABLE B.l (continued)

	Food Stamp Act of 1964 as Amended (PL 88-525)	Food Stamp Act of 1977 (PL 95-113) Effective l-l-79	Food Stamp Amendments of 1979 and 1980 (PL 96-58 and PL 96-249)	Omnibus Budget Reconciliation Act of 1981 (PL 86-35) and Food Stamp Amendments and Reauthorization Act of 1981 (PL 97-98) Effective 10-l-81
Accounting Period	Prospective month	Prospective month	States' option: prospective or retrospective w/monthly report	Retrospective becomes mandatory 10-l-83 for some households, prospective for others
Eligibility of Public Assistance Households	Automatically eligible	Must meet same conditions as other households	No change	No change
Asset Limits	$1,500, $3,000 for elderly household of at least hvo persons	$1,750; $3,000 for elderly household of at least two persons	$1,500, $3,000 for elderly household of at least hvo persons. Excludes vehicles used for handicapped	No change
Minimum Bonus	Minimum bonus for all, amount varied by household size	$10 for one- and two-person households only	No change	No change
Other Changes	Nationwide program	Elimination of purchase requirement	Increased state incen-tives for reducing error. SSNs required. Limits on eligible students; residents of shelters for battered women & disabled in small groups may participate.	Tighter definition of household, no extra benefits for strikers, prorated first month benefits, Puerto Rico block grant; exempt from work registration for selected persons with young children.

TABLE B.l (continued)

	Food Stamp Amendments of 1982 (PL-97-253) Effective 10-82 and Continuing Resolution of 1984 (PL 84473)	1985 Farm Bill (PL-99-198) Effective 5-86	1987 Homeless Assistance Act (PL-100-97)	Hunger Prevention Act of 1988 (PL 100435)
Allotment	Indexing to 99% rather than 100% of Thrifty Food Plan cost. Changed back to 100% by PL 98-473. Last step in benefit calculation rounded down	No change	No change	Incremental indexing to 103 % of Thrifty Food Plan by FY 1991 and thereafter.
Income Maximum	Nonelderly and non-disabled subject to both net and gross income limits	No change	No change	No change
Itemized Deductions	Next inflation adjustment delayed until 10-l-83; limits on the use of standard utility expense allowances	20% of earnings. Separate cap on shelter deduction of $147, with indexed increases. Separate cap on dependent care of $160, not indexed	Increased cap on shelter deduction for all households certified after October 1, 1987.	Dependent care deduction increased to $160 per month *per dependent,* rather than per household.
Standard Deduction	Next inflation adjustment delayed until 10-l-83	No change	No change	No change
Benefit Reduction Rate	No change	No change	No change	No change
Accounting Period	Migrant workers, elderly disabled households with no earnings exempt from monthly reporting	Retrospective budgeting and monthly reporting required for households with earnings or work history except migrant farmers and elderly or disabled with earnings	Exempts from monthly reporting requirements seasonal farmworkers and households in which all members are homeless.	No change
Eligibility of Public Assistance Households	No change	Automatic eligibility for pure AFDC or SSI households.	No change	No change
Asset Limits	States' option: waive asset test for pure AFDC households passing gross income test. IRA KEOGH accounts count as assets	$2,000; $3,000 for households with elderly member(s) (including one-person households). Changed definition of countable resources.	No change	No change

TABLE B.l (continued)

	Food Stamp Amendments of 1982 (PL-97-253) Effective 10-82 and Continuing Resolution of 1984 (PL 84473)	1985 Farm Bill (PL-99-198) Effective 5-86	1987 Homeless Assistance Act (PL-100-97)	Hunger Prevention Act of 1988 (PL 100435)
Minimum Bonus	No change	No change	No change	No change
Other Changes	Incentives for error rate reduction, limits student eligibility, benefits rounded down, job search requirements, Puerto Rico cashout prohibited. Household unit definition altered. No initial month benefit less than $10. SSI & SS COLA adjustments disregarded up to 3 months. New definition of disabled.	Selected changes include: new definition of disabled, minor changes in treatment of income, tougher work requirement provisions, new employment and training provision, Puerto Rico block grant funds, students in JTPA exempt from categorical restriction; residents of publicly operated mental health centers may participate.	Outreach efforts for homeless persons and other hard-to-serve groups. Simplified application process for these groups. Expanded eligibility for expedited source. Moved annual adjustment in income eligibility guidelines to October 1 of each year from July 1.	Expanded the definition of disabled. Excluded advanced EITC payments as income.

APPENDIX C
UNWEIGHTED SAMPLE SIZES FOR THE CASE RECORD SURVEYS
AND
UNWEIGHTED SAMPLE SIZES FOR THE CPS

APPENDIX C

TABLE C-l

UNWEIGHED SAMPLE SIZES
FOR THE CASE RECORD SURVEYS

Month/Year	Case Record Surveys
September 1976	11,038
February 1978	14,211
August 1980	4,140
August 1982	7,224
August 1984	6,918
August 1986	11,010
August 1988	10,695
August 1990	10,639

TABLE C-2

UNWEIGHTED SAMPLE SIZES
FOR THE CPS

Analysis Year	Eligible Households	All Households
1976	12,276	68,294
1978	10,122	68,455
1980	11,372	81,451
1982	10,335	73,195
1984	9,719	74,568
1986	9,953	73,843
1988	8,751	70,454
1990	9,348	75,076